JUNE 9, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

Hiatus in Auto Labor

Tactics behind "watchful waiting" in Detroit
— *Page* 57

Reforming Depreciation

Popular methods aim at inflation, obsolescence
— *Page* 65

Welder Saves $150,000

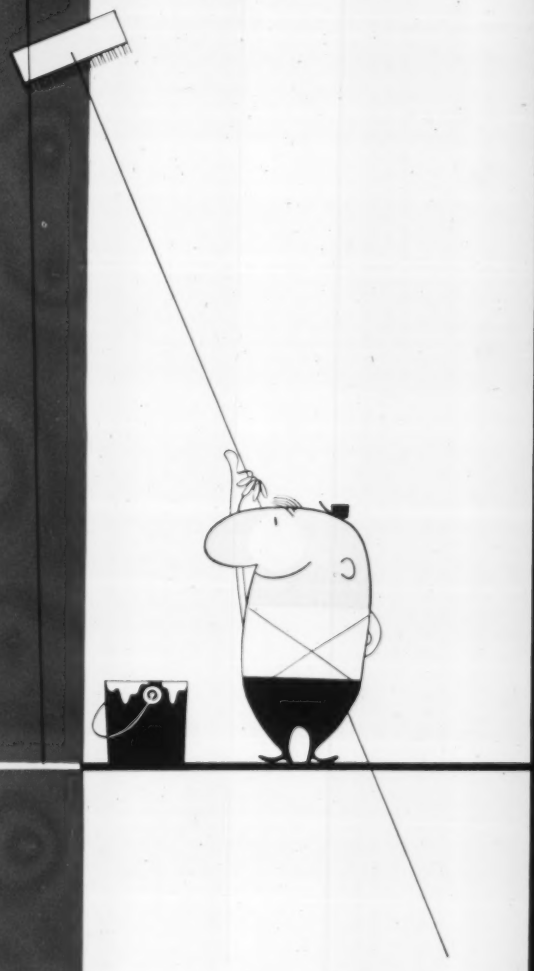
Semiautomatic pays for itself in first run
— *Page* 88

Better Electrical Steels

Here are ways to choose and improve them
— *Page* 116

Report on Aluminum Scrap

Categories change as aluminum uses multiply
— *Page* 139



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B&W's Mr. Tubes helps you engineer for profit

When your application involves steel tubular products, B&W's Mr. Tubes can help you *engineer for profit*—help you reduce costs and make a better product. Here is the reason why you should make him a member of your product-planning team:

Mr. Tubes, your local B&W district salesman—is thoroughly qualified to help you select the *one* tubular product best suited to your fabricating operations and end-use applications. For instance—in the case of a heat exchanger—should the tubing be seamless or welded? Single length or center welded for unusually long length? What about tolerances? Grade of steel? Mechanical properties and heat treatment? Standard or special specifications?

These are but a few of the many factors involved in determining the right tube for a job. Next time you are planning a product in which tubing is used — call in Mr. Tubes. He can be a valuable member of your team. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.

B&W

TUBULAR PRODUCTS DIVISION

TA-8033-G6

Seamless and welded tubular products, solid extrusions, seamless welding fittings and forged steel flanges—in carbon, alloy and stainless steels and special metals.

Sound Welds With Bethlehem Heads

Bethlehem Flanged-and-Dished Heads are easy to weld because they are made from grades of steel of uniformly high quality.

Types furnished include ASME Code, standard and elliptical flanged-and-dished, flanged-only, shallow-dished, tank-car, obround and double-dished. Diameters: up to 144 in.; thickness: 14 gage to 2½ in.

Bethlehem also produces standard manhole and handhole saddles, covers and fittings. We also furnish heads with flued openings. To help you maintain production schedules, Bethlehem stocks a number of flanged-and-dished heads for prompt delivery. Write to the nearest sales office for our stock list, or for full information on Bethlehem heads to meet your requirements.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

creative designing calls for an open mind

Leonardo Da Vinci's design for an odometer

Model courtesy of IBM

EVEN DA VINCI'S ODOMETER COULD HAVE BEEN BETTER WITH HELP FROM AN SKF ENGINEER.

An SKF engineer can afford to concentrate on your bearing problem rather than his own product line—because the SKF line includes all four types of ball and roller bearings in many thousands of sizes. This gives him the kind of flexibility he needs to keep an open mind on any bearing problem. Give your problem to SKF and see. 7836

Spherical, Cylindrical, Ball, and "Tyson" Tapered Roller Bearings

EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES INC. PHILADELPHIA 32, PA.

®REG. U. S. PAT. OFF.

Why do dies need less maintenance in the Wean "Flying Press"?

Before answering the question, perhaps we'd better establish the fact: firms which have conducted comparative die life tests report that significant savings have been achieved with the "Flying Press." One company reported a 36% monthly reduction in die maintenance costs, noting that part production between die grinds on one run was increased from 4,000 to 123,000 pieces. Another "Flying Press" user reported that dies which had previously required repair every three weeks in a conventional press ran for a year with only one grind in the "Flying Press" . . . and turned out over 1 million parts!

The answer to this cost-cutting aspect of "Flying Press" operation lies in its unique design. Since the dies are in motion in the "Flying Press," they operate at a lower temperature than in conventional presses. Another factor is the higher punching velocity inherent in the "Flying Press" design, with its 600 strokes per minute top speed. Other "Flying Press" features . . . such as its lower bed suspension system which minimizes side thrust on the gibs, and its dynamic balance . . . also contribute to longer die life and sustained accuracy of press adjustment.

Finally, dies are protected against damage by the protective devices built into the "Flying Press" to detect "cobbles" and prevent double hits. And the "Flying Press" uses standard dies, so there's no special expense involved in its tooling.

Operating economy is just one more reason that you should investigate this outstanding piece of metalworking equipment if your plant uses stamped parts in quantity. We'll be happy to send you literature or arrange an appointment for a Wean sales representative to discuss the potential of the "Flying Press" for your specific production operations. May we hear from you?

WEAN

WEAN EQUIPMENT CORPORATION

CLEVELAND 17, OHIO

Detroit • Chicago • Newark

"WEIRZIN'S ZINC-COATED SURFACE DEFIES CORROSION—TAKES PAINT BEAUTIFULLY!"

REPORTS LINCOLN METAL PRODUCTS CORPORATION, MAKERS OF BEAUTYWARE

A leading manufacturer of such housewares as kitchen canister sets, bread boxes, step-on cans and towel dispensers, Lincoln Metal Products of Brooklyn, N. Y., finds Weirzin electrolytic zinc-coated steel a natural for its purposes.

"Inventory problems are simply non-existent," says a spokesman. "You can store stamped-out parts of Weirzin indefinitely—even for years without worrying." Because its electrolytically fused zinc coating is so tight, not even the severest bending, drawing or crimping operation will flake or peel off its surface during fabrication. No exposed steel—no corrosion problem!

Also you'll discover—as have Lincoln Metal Products and many other users—that appearance is not the only beauty of chemically treated Weirzin's paintability: the economy of that lasting paint job is one of its biggest drawing cards, too.

In the market for a metal that combines strength, economy and super-resistance to corrosion? You'll find it eminently worth your while to investigate Weirzin.

Free Booklet "Weirzin" Gives Complete Details. Write to Weirton Steel Company, Dept. B-19, Weirton, West Virginia

WEIRTON STEEL COMPANY

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

This Week in STEEL The Metalworking Weekly

June 9, 1958
Vol. 142 No. 23

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The depreciation reform problem: Let's not settle for anything less than a complete solution.

SPECIAL FEATURE 65

What depreciation does to your income is frightening. There's not much hope left for reform at this session of Congress. But it's none too soon to start beating the drums for relief in 1959.

WINDOWS OF WASHINGTON 62

New appropriations to speed missile-work provide net gain of $375 million for metalworking.

MIRRORS OF MOTORDOM 69

This year's truck output will drop 19.7 per cent under last year's, sales 14.6 per cent, says Mr. Ford.

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After the holiday slowdown, trends appear ready to resume the upward movement which began in May.

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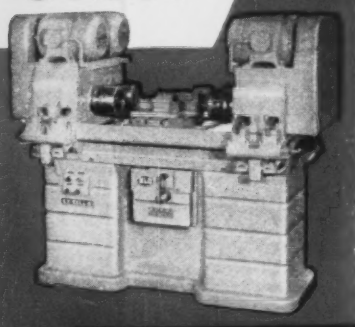
STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1958 by Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

Index available semiannually. STEEL is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.

MAXIMUM PRODUCTION AT LOW COST!



This Ex-Cell-O Style 1212-B Double-End Boring Machine practically *doubles production* when loading time of parts approximates the time of machining.

● **STYLE 772 DOUBLE-END: New. For extra large workpieces. Massive construction combines capacity and rigidity for bulky parts while permitting multiple-station work on smaller parts. Also available as SINGLE-END STYLE 771.**

● **STYLE 2112-B SINGLE-END: For work pieces in the small and medium-size range. Flexible hydraulic controls give easy adjustment of work cycle.**

● **STYLE 112-D: With long stroke for medium and heavy work requiring precision production.**

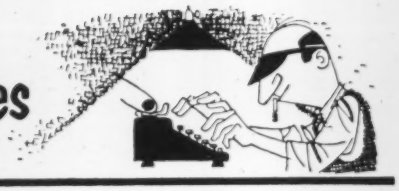
● **STYLE 17-A: Massive construction to maintain highest precision at production speed. Economical and easily tooled for a wide range of jobs.**

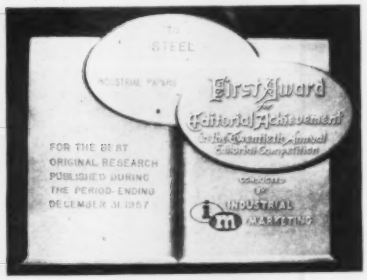
XLO *EX-CELL-O FOR PRECISION*

57-42A

EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

behind the scenes





Stainless Article Wins

A song that was popular some years ago concerned the virtues of apple pan dowdy, and among its deathless lines was this dilly: "I never get enough of that wonderful stuff." A prudent employee of the nation's foremost metalworking weekly would think twice before associating apple pan dowdy with STEEL, but we're too busy to think twice; moreover, the line is appropriate, as we shall demonstrate in a moment.

Illustrated above is a plaque presented to STEEL by *Industrial Marketing*. It represents a First Award for Editorial Achievement in the 20th Annual Editorial Competition conducted by that publication. STEEL's winning entry (for best original research) was a special study called "Trends in Metals: Stainless Steels." It appeared Nov. 4, 1957.

If Sal Marino, STEEL's go-go promotion director, were here to check this copy, he might question the line—"it represents a First Award." We can hear him saying: "First award? Why, STEEL has won six plaques over the years, not to mention 17 certificates and two special awards. But even if we stacked 'em up knee deep, we never get enough of that wonderful stuff."

More on Depreciation

This week's depreciation article (Page 65) considers two of the more practical approaches to the problem. One is the bracket system adapted from the Canadian method, and the other is a reinvestment deal. We did a little depreciation investigation of our own on the side and were interested to learn that legislators and even some segments of the taxpaying body were not inclined to work up a lather over the situation. "Eh!" they said, in effect. "Suppose you save a little write-off? It'll be taken from you by a levy or something else."

News of this attitude comes as something of a surprise, because, judging by the interest stirred up by STEEL's series on depreciation, we thought the U. S. population to a man panted avidly after depreciation reform.

"It's this way," said a gentleman who hit us up for a quarter at broad midday. "If you own a couple of overhead cranes, and a shtamping machine (hic!), and a whole pile of capital equipment, you know what I mean, and you want to replace 'em, what are you going to do?"

"Well, sir, what are you going to do?"

"Me? I'm gonna get a drink."

Solution to the depreciation problem is not that easy, unfortunately. However, after reading STEEL's current article on the subject, you will have a better understanding of what interested persons think about it.

Say What You Mean

The National Office Management Association, Philadelphia, an 18,000-member international association of business executives, recently produced a glossary defining 500 words commonly used today when talking about automation. If you orbit with automation folks, you will be obliged to reshuffle your old-fashioned vocabulary. An error, for instance, must never be confused with "mistake." "Error" is the amount of loss of precision in a quantity. A "file" is "a sequential set of items." A "band" is a group of recording tracks. And what, pray tell, is a branch? It is "a conditional jump." "Trunk" means the same as "bus." "Column" is a little rougher; it means "one of the character or digit positions in a positional notation representation of a unit of information." You'll be happy to learn that columns are usually numbered from right to left.

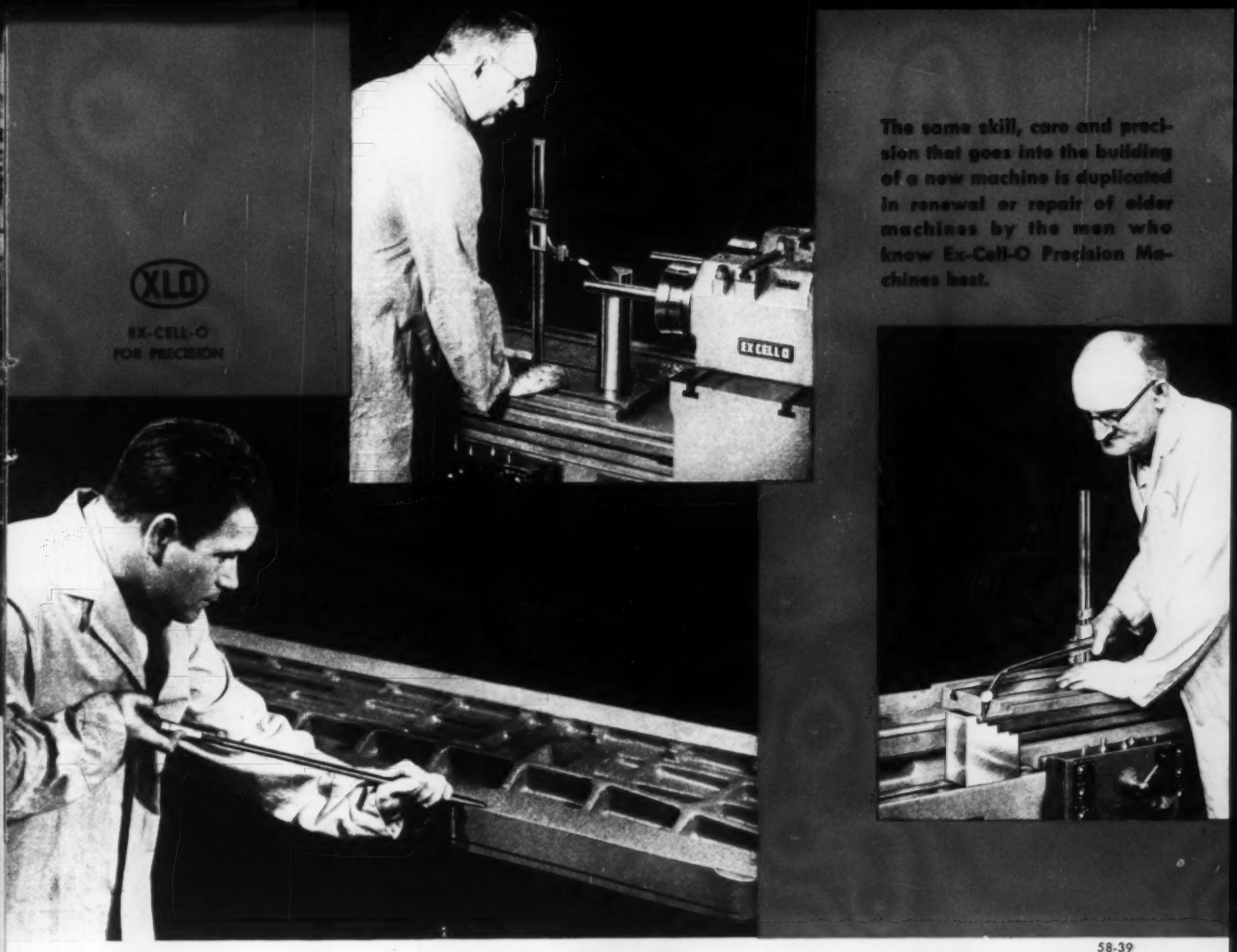
NOMA (Willow Grove, Pa.) sells the glossary to nonmembers for $2.

For Reverend Attention

The Rhind Papyrus was 6¾; a Muscovite headline could have been: "Six thou-sand en-e-my e-co-no-mists le-git-i-ma-tized." Most of our valued correspondents were right on the beam, as usual. Sometimes we wonder about the penetration power of STEEL; we've had communications from schoolboys, housewives, corporation presidents, retired professors, old sailors, salesmen, aviators, office girls—well, about the only category left is clergymen. Here's one for them: It has been said that one book of an old King James version does not contain the word God or Lord. Which book is it?

Shrdlu

(Metalworking Outlook—Page 49)


XLO
EX-CELL-O
FOR PRECISION
EX CELL O
The same skill, care and precision that goes into the building of a new machine is duplicated in renewal or repair of older machines by the men who know Ex-Cell-O Precision Machines best.

58-39

Are you ready for the business upsurge?

RENEW YOUR EX-CELL-O MACHINES NOW!

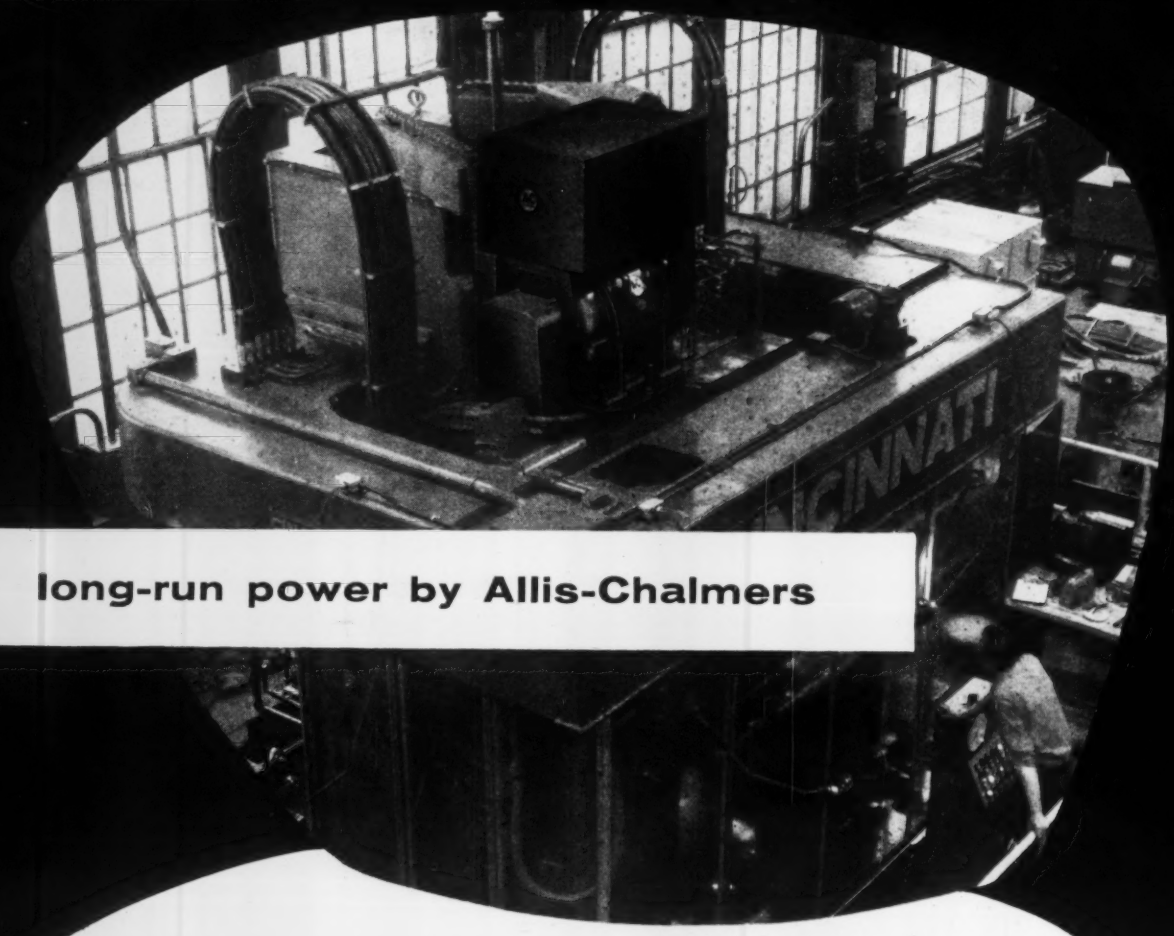
Better business is just around the corner, and now's the time—when your present Ex-Cell-O equipment may not be in continuous service—to release idle machines for renovation before full production begins once more.

Ex-Cell-O's facilities for machine repair or renewal are geared to your specific needs—whether it's a planned modernization program or an emergency repair job. The service is fast, the workmanship thorough; and, of course, necessary replacements are Ex-Cell-O "original equipment" precision parts.

For complete satisfaction and guaranteed results, put your Ex-Cell-O machines in the hands of the men who know them best. Contact your local Ex-Cell-O Representative, or call direct for complete details.

EX-CELL-O CORPORATION *Machinery Division*
DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING AND BORING SPINDLES • CUTTING TOOLS • TORQUE ACTUATORS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT



long-run power by Allis-Chalmers

Even the worst atmospheres can't hurt NEW self-cooled dc motors

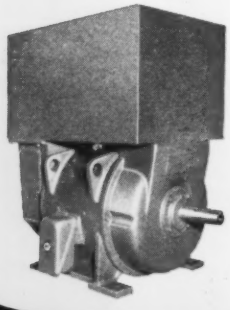
Oil concentrations, dirt, moisture, fly ash, all types of dust — none can affect the long-run power of these new totally-enclosed, self-cooled dc motors from Allis-Chalmers.

For machine tools, steel mill drives, paper mills, cement and rubber plants, these motors are ideal. Here's why:

- Volume of cooling air is *not* affected by motor speed. Outside air is drawn into heat exchanger unit by blower and circulated over the frame. Hot motor air is removed by the exchanger.
- Filters sift impurities from outside air as it enters the heat exchanger.
- Self-contained heat exchanger unit may be quickly removed for maintenance. Further, dc brushes and commutator are also readily accessible.
- Motor-heat exchanger combination is so constructed as to allow top, sidewall or ceiling mounting.

COMPLETE LINE of new dc motors is available from 10 hp to 400 rpm through 200 hp. They are backed by same nationwide engineering service that stands behind all types of Allis-Chalmers motors from 1 hp up.

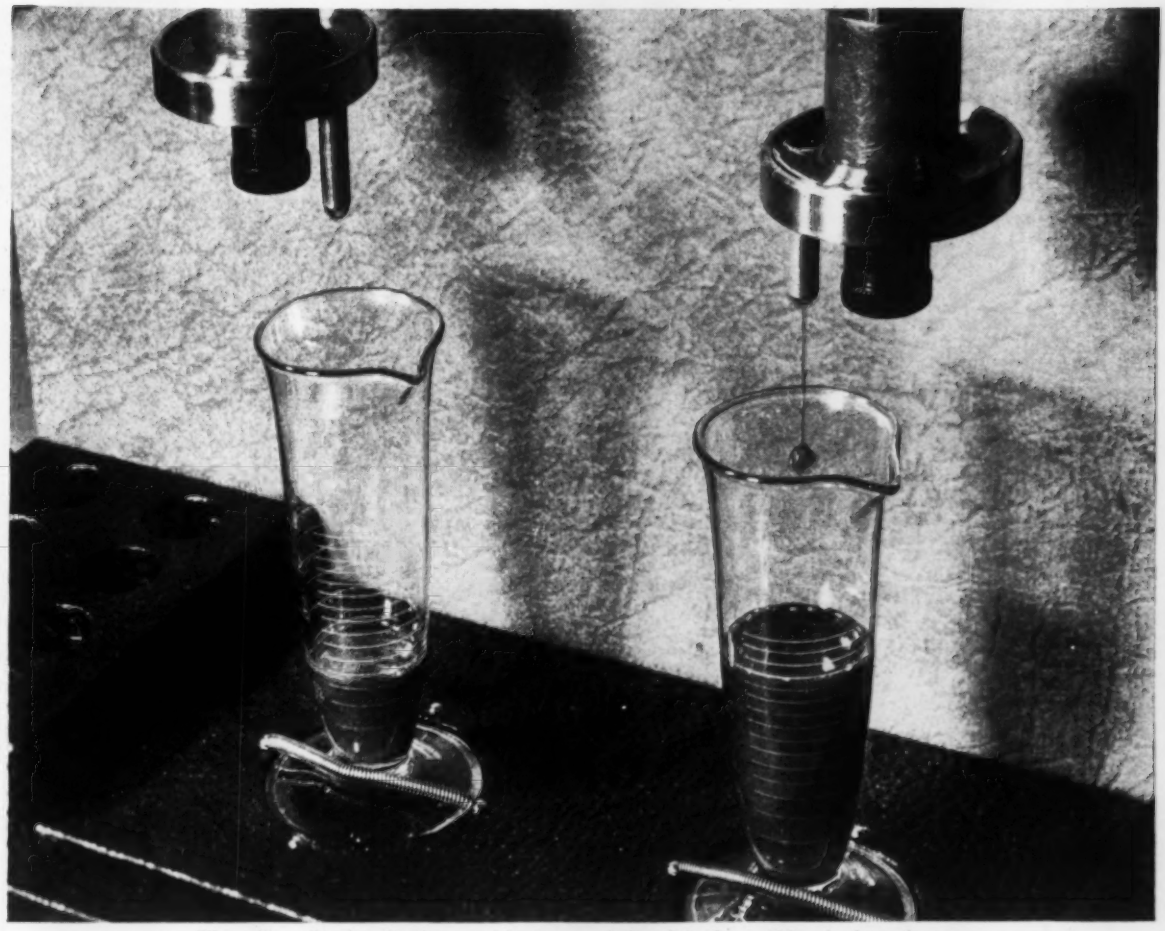
See your A-C representative or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.



ALLIS-CHALMERS

A-5731

NEMA 50th Anniversary MOTOR & GENERATOR SECTION



The oils collecting in these graduates are being forced, at 100 psi, through two sintered bronze bearings. Although each oil has the same viscosity, the Suntac on the left is leaking *only one quarter as much as* the straight oil on the right.

Desk-top demonstration proves that SUNTAC HYDRAULIC OILS can cut your oil losses . . . up to 75%

Suntac® oils are competitive in price, competitive in quality, *and unique in their ability to reduce oil leakage without costly shutdowns.*

Suntac oils are high-quality, exceptionally stable mineral oils especially compounded to reduce leakage. Experience proves that they give longer pump and seal life with higher overall operating efficiency.

See for yourself how a Suntac oil can cut your oil costs. A simple desk-top demonstration will show you how.

Ask your Sun man to show you how others have reduced oil consumption, or write to Dept. S-6.

Industrial Products Department

SUN OIL COMPANY, Phila. 3, Pa.

SUNOCO®

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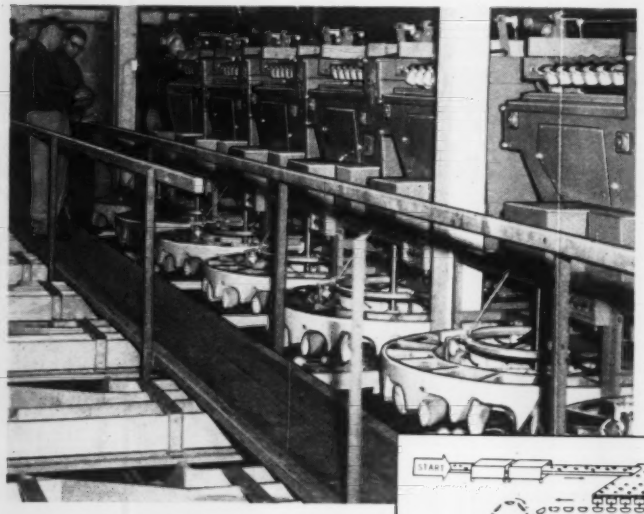
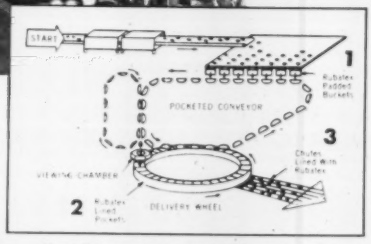
In Canada: Sun Oil Company Limited, Toronto and Montreal

Rubatex cushions dropping of over a million lemons a day in electronic color-sorting machine



Versatile Rubatex (stock R-411-N) used as a bumper guard for washing machines, vibration isolator and dust seal for control instrument panels and oil resistant gaskets for radar, automotive and aircraft industries —now plays an important part as cushion padding in the electronic color-sorting machine of Electric Sorting Machine Company, Division of Mandrel Industries, Inc., Houston, Texas.



How lemons are graded—by color—electronically

Over a million lemons a day are protected from bruise . . . (**1**) when unsorted lemons are dropped seven at a time into Rubatex-padded buckets attached to endless chains which carry lemons on to viewing chamber . . . (**2**) where, after color decision, they again fall into Rubatex-lined pockets of delivery wheel . . . (**3**) and later are dropped onto a Rubatex-lined conveyor which moves on to crating area.

Whenever you have a problem of sealing, cushioning, or vibration isolation—be sure to check the advantages of Rubatex Closed Cellular Neoprene first!

RUBATEX
CLOSED CELLULAR NEOPRENE

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GREAT AMERICAN INDUSTRIES, INC.
Bedford, Virginia

PIONEER MANUFACTURER OF CLOSED CELLULAR RUBBER

Just fill out and mail for free sample and more information about Rubatex Closed Cellular Neoprene.

Name _____

Send for Free Sample and Data Sheets

LETTERS
TO THE EDITORS

Institute Lauds Campaign

We have noted with interest your articles and editorials on the deplorable situation regarding depreciation schedules of capital equipment. We are wholeheartedly in agreement with the type program you are publicizing.

L. West Shea
Managing Director
Material Handling Institute Inc.
Pittsburgh

Supports Depreciation Reform

We were interested in your article, "Let's Leap to Recovery with Bold Action on Depreciation" (Apr. 28, Page 55), and are enclosing for your information a copy of "Profit Life of Textile Machinery." This document was used as supporting evidence for our recommendation to the Internal Revenue Service in the revision of "Bulletin F."

C. G. Caffrey
Washington Representative
American Cotton Manufacturers Inst. Inc.
Washington

Steel Price Discussion Slated

Our organization is conducting economic discussion groups. A member brought to one of these groups a copy of your article, "Will Steel Prices Rise?" (May 12, Page 45). The group found it so interesting that we would appreciate 90 copies to distribute to business and professional leaders attending these sessions.

Howard E. Norris
Executive Vice President
Waukesha Chamber of Commerce
Waukesha, Wis.

Construction of Labor Contract

Please send us three tearsheets of your excellent article, "Building a Labor Contract" (May 19, Page 125), No. 4 in 1958's Program for Management series.

R. C. Dickieson
Assistant Treasurer
New York & New Jersey Lubricant Co.
New York

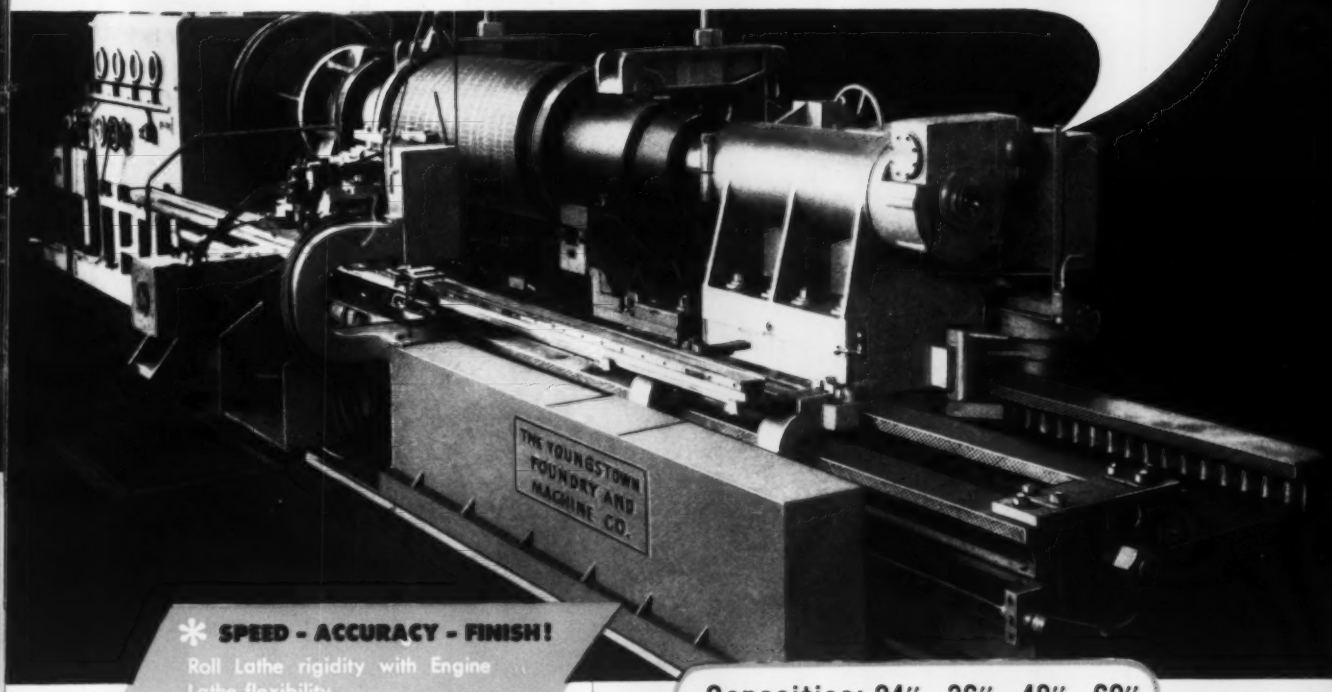
• • •

I have just read this article with profound interest. It is lucid and well written. Please send a copy of each of the articles in the 1958 Program for Management published so far this year. I want

(Please turn to Page 12)

tomorrow's design in today's

Now "YOUNGSTOWN" Contour Roll Lathes*



Capacities: 24" - 36" - 48" - 60"

* **SPEED - ACCURACY - FINISH!**
Roll Lathe rigidity with Engine Lathe flexibility

* **NEW HYDRAULIC TRACER**
controlled automatically. Front mounted tracer and templet for operating ease and faster set-up

* **NO FACEPLATE OVERHANG!**
Faceplate supported by extra large Timken roller bearings mounted on extra large torque hub to carry heavy radial and thrust loads

* **NEW TOOL POST & CARRIAGE**
designed for either single point carbide-tipped tools or regular roll turning tools

* **RUGGED HEAD STOCK!**
Herringbone gearing; automatic lubrication; illuminated inspection ports

Turn rolls better and faster with Automatic Tracer Control

Far ahead in design and efficiency, this new roll lathe has been developed to turn rolls better and faster . . . either on necks or centers . . . from the smallest bar mill roll to the largest back-up roll. Tested and proved in our own roll shop. Capacities to meet your specific needs.

The 48" roll lathe pictured has a speed range of 1.40 RPM to 81.1 RPM. Roll capacities: 18" minimum diameter, 50" maximum diameter, with 20'0" maximum length. Hydraulic ragging attachment can be furnished, as illustrated. Tell us your requirements . . .

Write for Complete Information

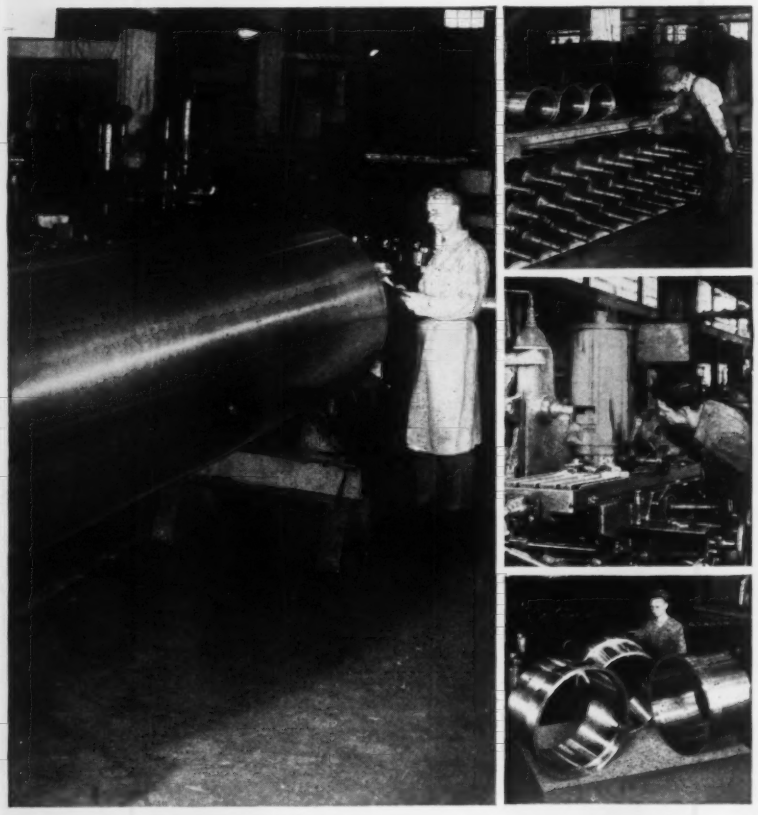
The Youngstown Foundry & Machine Company

Serving Industry Since 1885

Youngstown 1, Ohio

HEAVY MACHINERY • AUXILIARY EQUIPMENT • CASTINGS • ROLLS

"YF&M" builds the best of them



You'll find them better for pressure if they're

SHENANGO CENTRIFUGAL CASTINGS

WHATEVER the inside or outside pressures, Shenango centrifugal castings are better able to withstand them without failure.

Parts cast by the Shenango centrifugal process are much tougher because their finer, *pressure-dense* grain avoids stress concentrations while providing greater strength, better elongation and freedom from such costly defects as sand inclusions, blowholes and such.

Whether you need rings, rolls, sleeves, liners, bushings, bearings, mandrels or *any* annular or symmetrical part . . . ferrous or non-ferrous . . . in whatever shape, size or dimension to meet your requirements . . . Shenango can do the job. And do the job *better!*

For informative bulletins on the answers to your tough problems, it will pay you to write now to: *Centrifugally Cast Products Division,* The Shenango Furnace Company, Dover, O.

SHENANGO CENTRIFUGAL CASTINGS

COPPER, TIN, LEAD, ZINC BRONZES • ALUMINUM AND MANGANESE BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL • ALLOY IRONS

LETTERS

(Concluded from Page 10)

to add them to my personal reference library.

Dr. Donald R. Herzog
Solar Aircraft Co.
San Diego, Calif.

• • •

Your staff is to be congratulated on the fine job it is doing on the Program for Management series. Kindly send us three copies of this article.

John C. Enblom
President
Crenlo Inc.
Rochester, Minn.

Tool Guide To Help Customers

We would like 12 copies of your compilation, "A Guide to Tool Steels & Carbides" (Apr. 21 insert). We feel this excellent reference information would be of great help to our customers.

Ken Kelley
Representative
Ziv Steel & Wire Co.
Chicago

Thanks for Timely Articles

Please send five copies of the article, "Preview of Space Age Metals" (May 5, Page 86). Many thanks for this and other timely articles on the subject which appear in your magazine.

J. W. Wilton
Chief Metallurgist
Wallingford Steel Co.
Wallingford, Conn.

Machining Speed Roundup

Please send two copies of the article, "Boost Your Machining Speeds" (May 5, Page 84). It is well written and contains valuable information.

W. W. McCulloch
Sales Manager
Special Products Div.
American Cast Iron Pipe Co.
Birmingham

Leasing Is Good Sales Tool

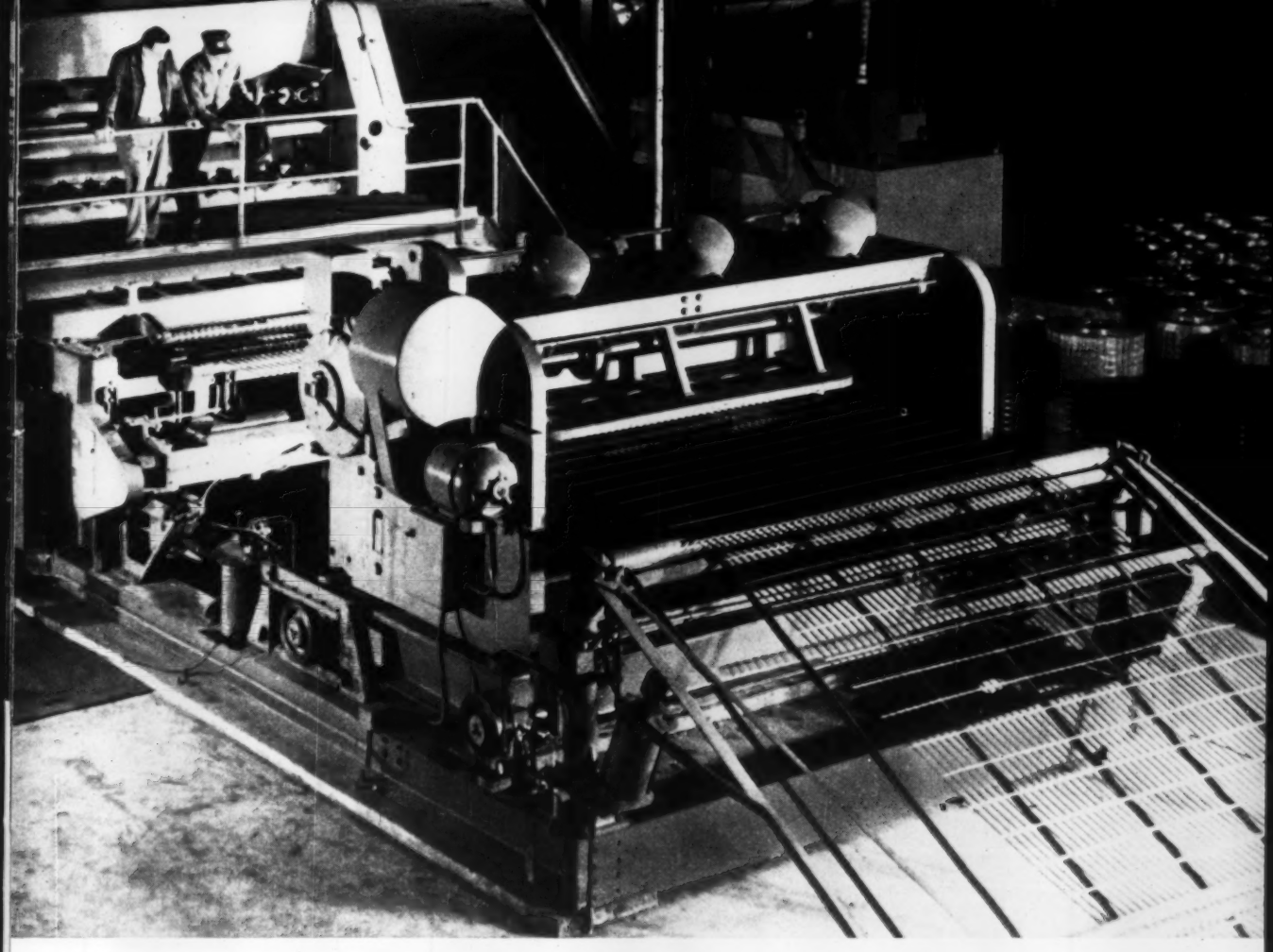
We have read with great interest the intelligently presented article, "Machinery Rentals: New Lease on Life?" (Apr. 14, Page 86). We would appreciate four copies.

Edward F. Garnett
Equitable Leasing Co.
Los Angeles

Excellent, Concise Picture

We have just read your Program for Management article, "Managing Defense-work for Profit" (Apr. 14, Page 125). It gives an excellent and concise picture. May we have ten copies?

H. G. Keltner
Office Manager, Sales
Green River Steel Corp.
Subsidiary of Jessop Steel Co.
Owensboro, Ky.



Cincinnati Shear cuts wire mesh at Pittsburgh Steel

The Cincinnati Shear shown is part of an automatic wire welding machine at Pittsburgh Steel Company, Monessen, Pennsylvania. The machine produces wire mesh and fabric used for concrete pipe, buildings, and other applications. The photograph shows the shear cutting forty-seven 2/0 gauge (.331") wires per stroke. The wire is low carbon, cold drawn steel. Other jobs require shearing mesh with wires up to ½" diameter.

This shear was specially engineered for this type of application. Because cuts are heavy and production is continuous, Cincinnati dependability is essential.

Standard Cincinnati Shears offer such productive features as powerful hydraulic hold-downs, all-steel interlocked construction, and one-clearance shearing of different metal thicknesses.

Write Department C for Shear Catalog S-7R.

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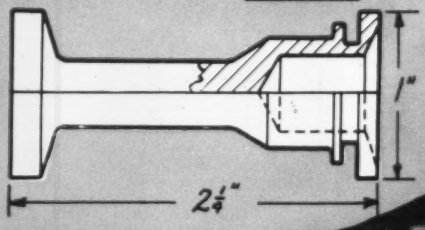
THE CINCINNATI SHAPER CO.

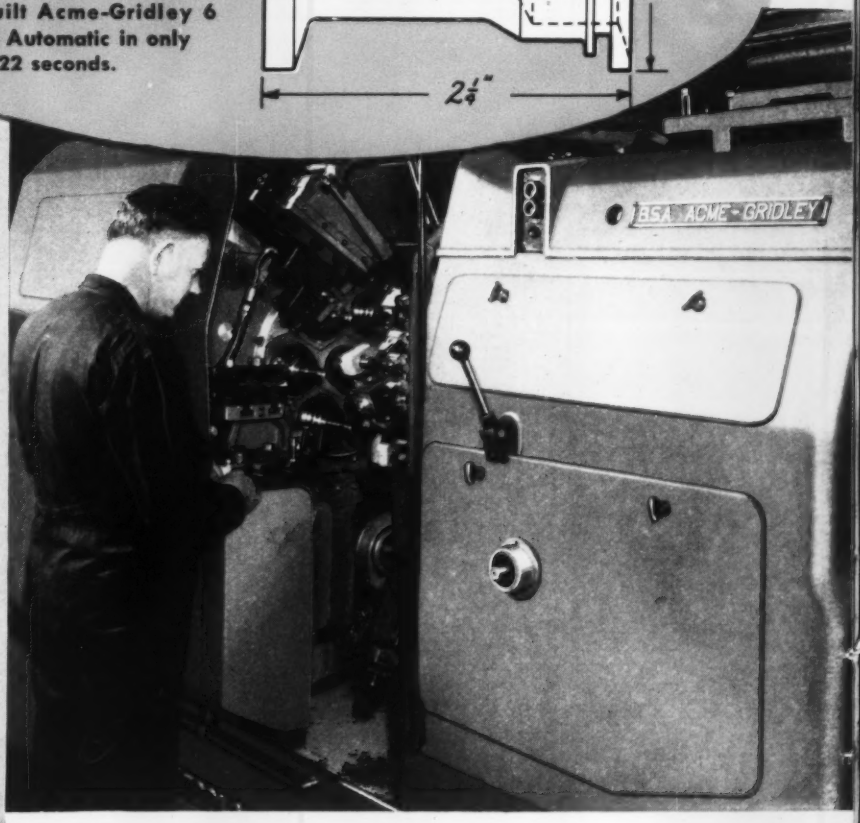
Cincinnati 11, Ohio

All 'round the world...

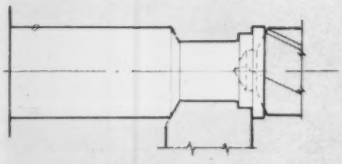
How Acme-Gridley BASIC DESIGN saves time in AUSTRALIA

This Piston Master Cylinder requires 14 operations to complete. All were performed on a British built Acme-Gridley 6 Spindle Automatic in only 22 seconds.



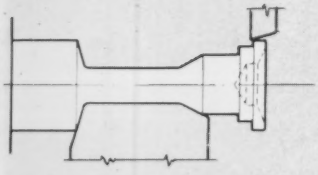


1⅝" Six Spindle Acme-Gridley Bar Automatic at work in a suburb of Sydney, Australia.



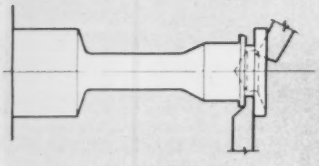
6TH. POSITION

FEED OUT—FORM FRONT HALF-DRILL PARTWAY



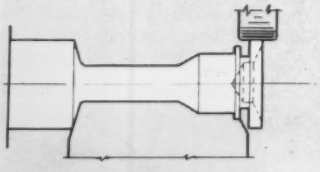
1ST. POSITION

FORM BACK HALF TURN HEAD DIAMETER



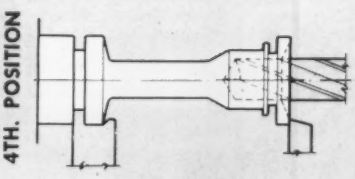
2ND. POSITION

FORM GROOVE— TURN INTERNAL CHAMFER



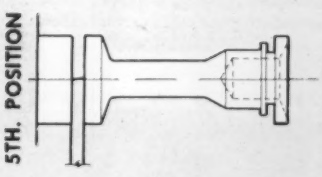
3RD. POSITION

FINISH FORM—SUPPORT



4TH. POSITION

FACE END
DRILL REMAINDER
FORM REAR AND
BREAKDOWN FOR CUT-OFF



5TH. POSITION

CUT-OFF

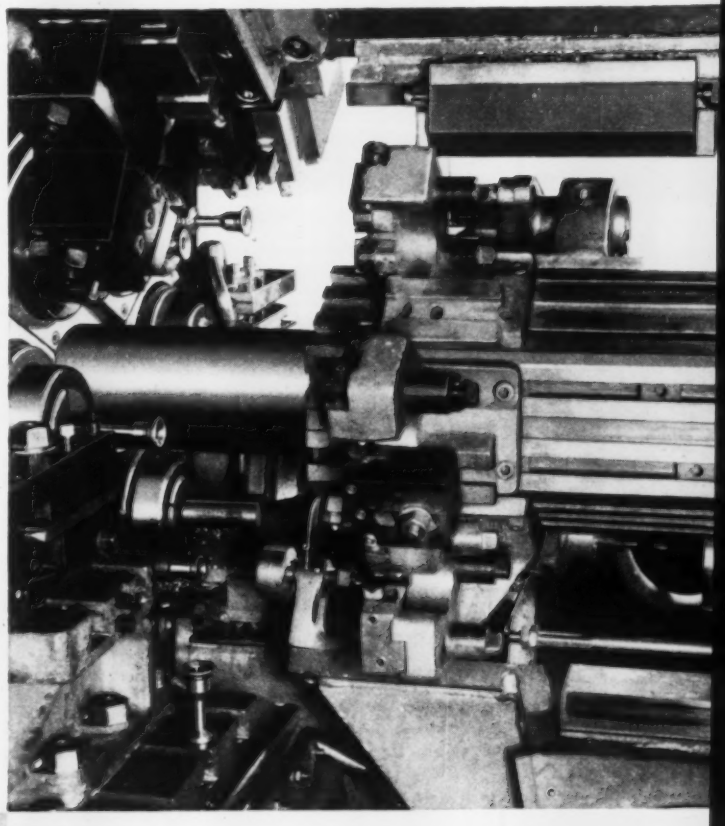
. . . where there's work to be done and time to be saved . . .

there's an Acme-Gridley* to do it!

If you were to walk down Tarrington Road in Sydney, Australia, you'd hear a busy whir that is a familiar sound in the metalworking plants of Detroit and Dusseldorf, Cleveland and Coventry. It's the sound of Acme-Gridley automatics producing metal parts at high speeds, great precision and maximum economy.

A typical example of Australian production is the piston master cylinder illustrated. This part, produced by Messrs. Duly & Hansford Pty. Ltd. of Sydney, is machined on a 6-spindle Acme-Gridley automatic from free cutting mild steel bars. The production cycle is 22 seconds—a tremendous saving in time over any other possible method.

This high speed—high quality production is typical of the way Acme-Gridley circumferential automation makes things faster—better—cheaper—all 'round the world. That's why we say "When there's work to be done and time to be saved, there's an Acme-Gridley to do it."



The wide-open tooling zone of Acme-Gridley Automatics provide extra capacities—extra versatility.

why don't you

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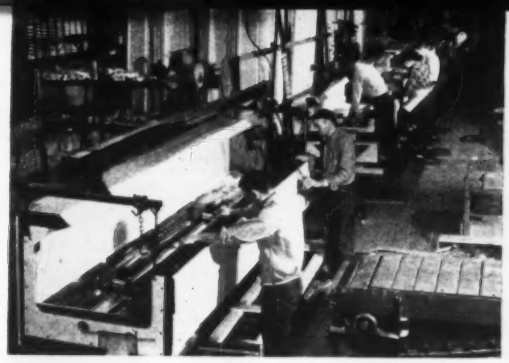

Workmen busy *on the Hussmann assembly line in St. Louis producing quality refrigerated showcases for food markets all over the world.*

Accent on Excellence

Youngstown hot and cold-rolled sheets

Progressive food merchandisers realize they must *make every inch of space show more* if they hope to keep competitive in today's fast-moving market. Helping thousands of retailers do just that are the many different models of Hussmann Refrigerated "Store-Stretchers", produced in St. Louis, Mo.

In fabricating these beautiful, highly functional cases, Hussmann—the world's largest builder—uses Youngstown Hot Rolled Pickled and Oiled Sheets for structural framing and supports—also our Cold Rolled Sheet Coils for housings and shelving.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

QUALITY YOUNGSTOWN SERVICE

THE **YOUNGSTOWN** SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio

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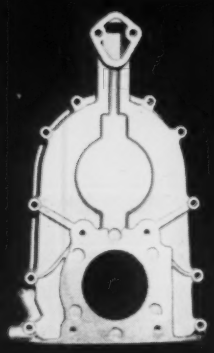
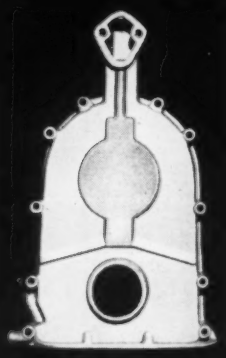


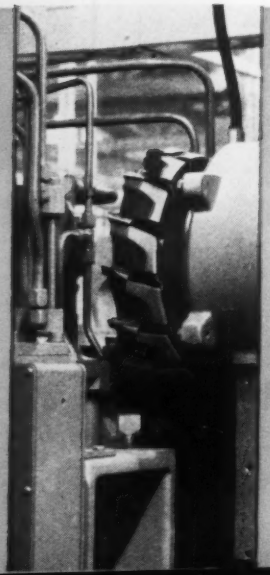
LOAD THESE TWO PARTS AT RANDOM

Conventional Steering Cover

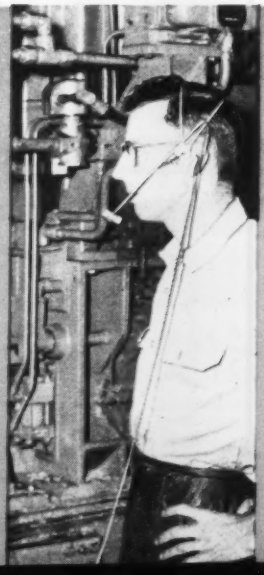


This Natco selects the cycle automatically– machines 200 parts per hour, regardless of mix

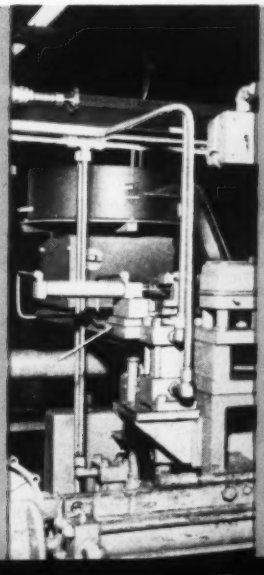
One of the two stations where milling operations are performed (machine guard-rail removed).



Communication with the main control pulpit can be obtained from phone jacks along the entire 68-foot machine.

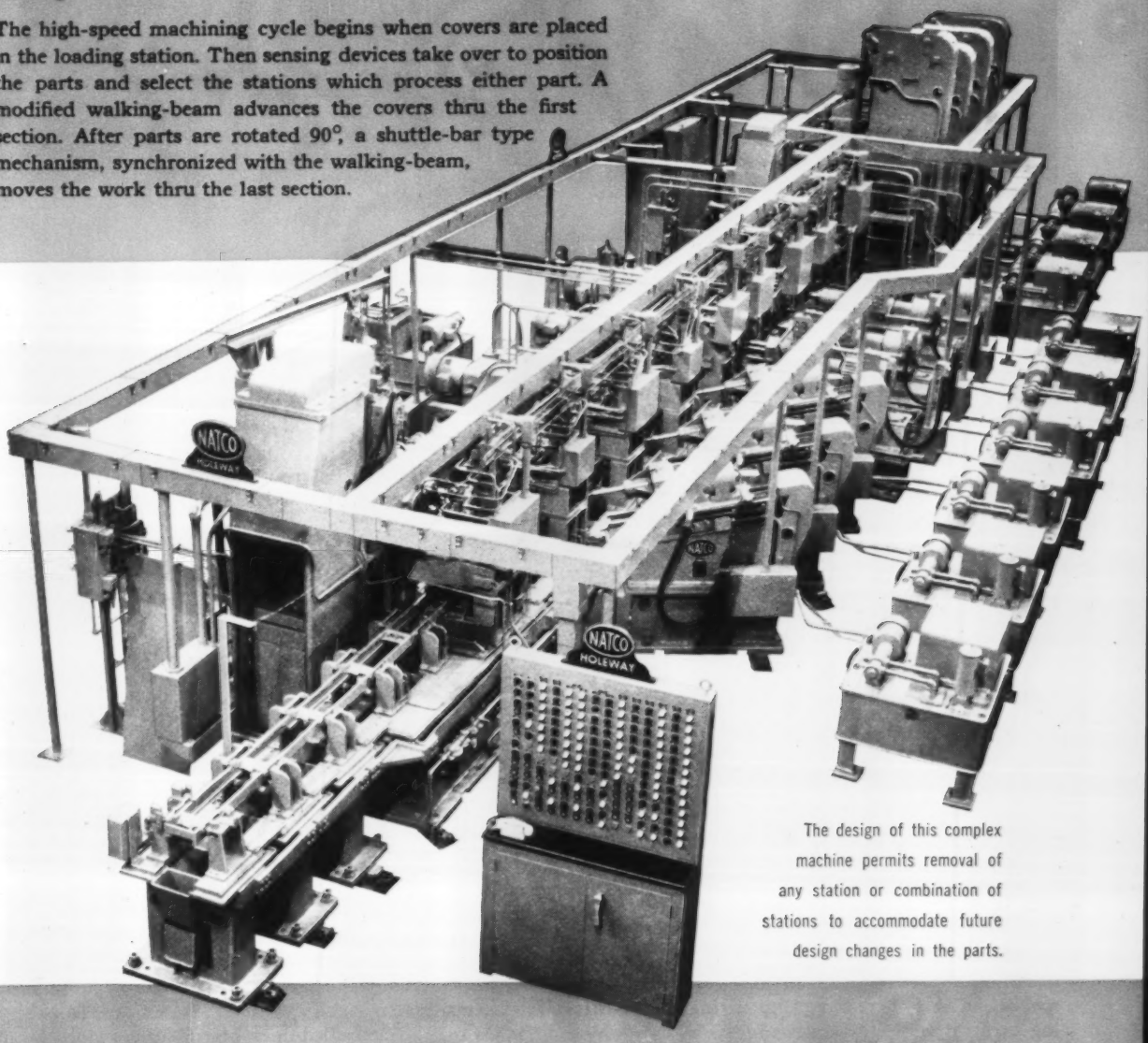


A vibratory feeder delivers Welch plugs which are inserted in the necks as the covers reach final processing stages.



This 32-station NATCO Transfer and Assembly Machine is part of the automated production-line on which engines are built at a major automotive plant. The NATCO performs selectively a number of unusual processing operations in the work cycle, including milling, deep-hole drilling, Welch-plug assembling, and probing.

The high-speed machining cycle begins when covers are placed in the loading station. Then sensing devices take over to position the parts and select the stations which process either part. A modified walking-beam advances the covers thru the first section. After parts are rotated 90°, a shuttle-bar type mechanism, synchronized with the walking-beam, moves the work thru the last section.



The design of this complex machine permits removal of any station or combination of stations to accommodate future design changes in the parts.

This Transfer and Assembly Machine is one of a large number of NATCOs which perform many types of complex processing operations in all kinds of manufacturing plants. A NATCO field engineer will furnish you with detailed information; a phone call may save you valuable processing time.

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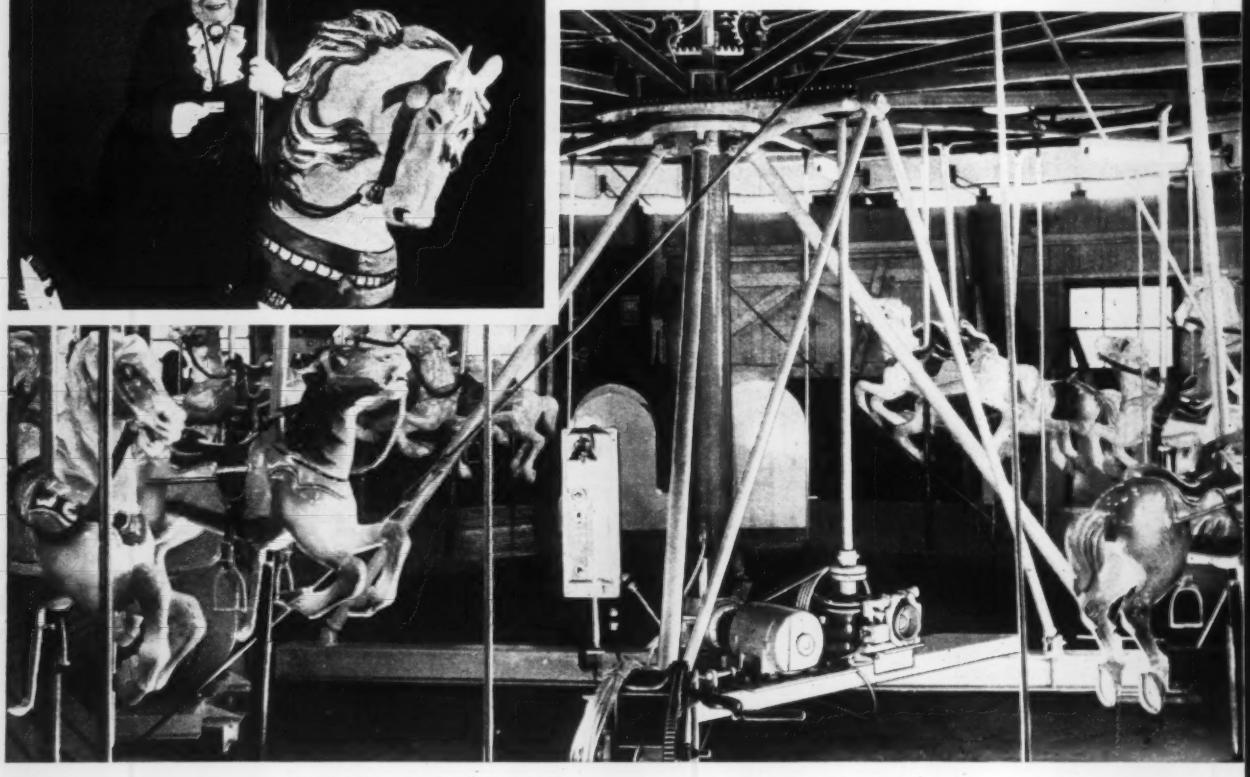

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Republic ELECTRUNITE® Mechanical Tubing offers many outstanding fabricating advantages in the highly specialized field of creating, engineering, and constructing carnival and park amusements. That is why the Allan Herschell Company, Inc., world's largest manufacturer of merry-go-rounds and amusement rides, specify ELECTRUNITE.

For example, Republic ELECTRUNITE 3" Square Tubing is used for the sweeps which radiate from the top of the merry-go-round. Horses and other equipment are suspended from these sweeps, as well as passenger loads.

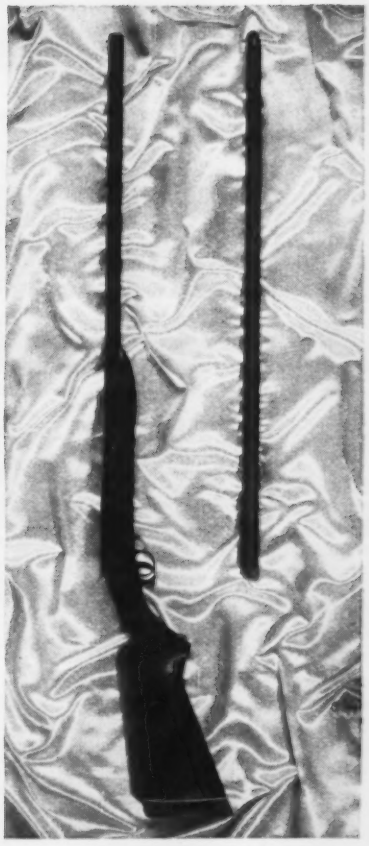
ELECTRUNITE is strong, rugged, lightweight with high strength-to-weight ratios that assure safe, dependable day-in, day-out operation. Because of this lightness and strength, portable amusement equipment built with Republic ELECTRUNITE is easy and economical to set up, take down, and transport.

With Republic ELECTRUNITE, strength, weight, and safety are built-in because ELECTRUNITE is quality controlled from Republic mines, through Republic mills, to manufacturing. ELECTRUNITE is produced from highest quality flat-rolled open-hearth steel, welded by the exclusive ELECTRUNITE process—a continuous electric weld method that unites the wall under pressure without the addition of foreign or extra metal. Tests prove the ELECTRUNITE weld is as strong or stronger than the original base metal.

Republic ELECTRUNITE Tubing fabricates easily, economically, with uniformity. It is available in a wide range of sizes and provides uniform wall thickness, ductility, concentricity, diameter, and other physical and mechanical properties in flanging, flaring, bending, expanding operations.

Let Republic engineers help you select ELECTRUNITE Tubing to meet your many and varied needs. Call your Republic representative or write today.

SOLVE DIFFICULT ASSEMBLY PROBLEMS WITH REPUBLIC HEX HEAD CAP SCREWS, available in a wide variety of steel analyses including ENDURO® stainless, alloy, high carbon (heat treated) and low carbon in sizes suited to all types of precision assemblies. Diameters range from ¼ inch to 2 inches inclusive, with lengths to 12 inches. Fine or coarse threads are provided in each size and material — and other head styles can be furnished on request or order. Write today.



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REPUBLIC ALLOY STEEL shrugs off fatigue, terrific torque, high impact load, in motor graders built by Adams Division of LeTourneau-Westinghouse Company. The grader's full-floating, two-section drive axle is made of Republic Hot Rolled 4340 Alloy Steel, resists fatigue, is able to take high torque without permanent set. Write today.

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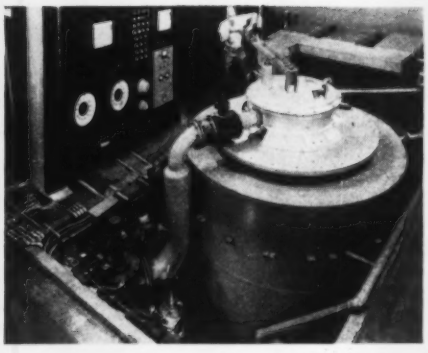

2

3

1 *A new gas fired Homocarb said to be the world's largest.*

2 *A Vacuum Heat Treating Furnace for special materials.*

3 *Large capacity vertical furnace for heat treating large parts.*

The three furnaces shown on this page are units of the facilities of commercial heat treating plants in three different sections of the country.

Today, with the ever growing demand for *better* heat treating, economical volume equipment of this sort is becoming essential and the commercial heat treater has been alert to industry's requirements.

Quality work and versatility are the keynotes of this industry's objectives when treating the thousands of vital, intricate, and costly components of important products.

Whatever your heat treating problem, and whether it involves pounds or tons, always consult your commercial plant first.

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North Arlington, New Jersey

CALENDAR
OF MEETINGS

June 9-10, Malleable Founders' Society: Annual meeting, Homestead, Hot Springs, Va. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

June 9-11, American Management Association: Special manufacturing conference, Hotel Carter, Cleveland. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

June 9-12, National Material Handling Exposition & Conference: Public Auditorium, Cleveland. Information: Clapp & Poliak Inc., 341 Madison Ave., New York 17, N. Y.

June 9-13, International Automation Congress & Exposition: Coliseum, New York. Information: Richard Rimbach Associates Inc., 845 Ridge Ave., Pittsburgh 12, Pa.

June 15-19, American Society of Mechanical Engineers: Semiannual meeting, Statler-Hilton Hotel, Detroit. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

June 21-24, Alloy Casting Institute: Annual meeting, Homestead, Hot Springs, Va. Institute's address: 286 Old Country Rd., Mineola, N. Y. Executive vice president: E. A. Schoefer.

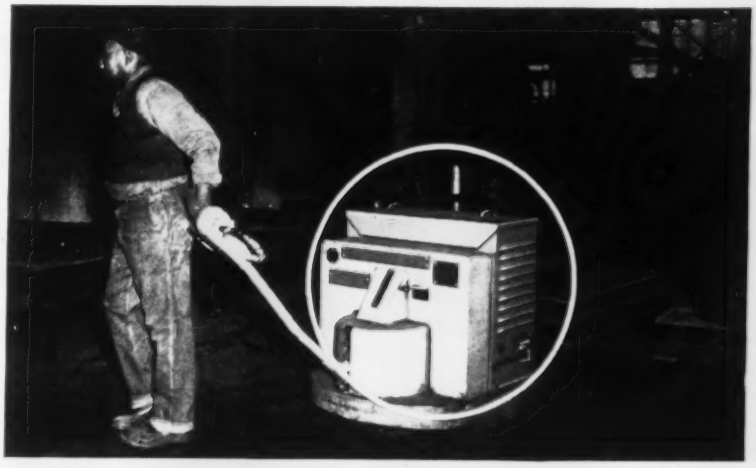
June 22-27, American Society for Testing Materials: Annual meeting and exhibit, Statler-Hilton Hotel, Boston. Society's address: 1916 Race St., Philadelphia 3, Pa. Executive secretary: Robert J. Painter.

June 23-27, American Institute of Electrical Engineers: Summer general meeting, Hotel Statler-Hilton, Buffalo. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

June 24-26, American Marketing Association: National conference, Harvard Graduate School of Business, Boston. Association's address: 27 E. Monroe St., Chicago 3, Ill. Secretary: Schuyler F. Otteson.

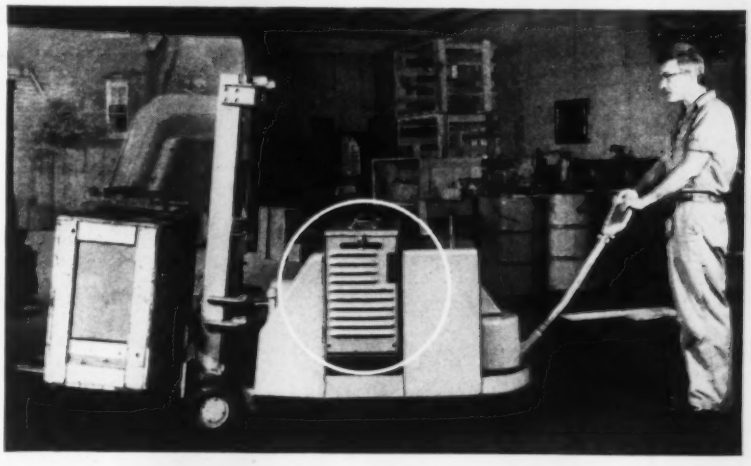
July 14-16, Truck-Trailer Manufacturers Association: Summer meeting, Homestead, Hot Springs, Va. Association's address: 710 Albee Bldg., Washington 5, D. C. Managing director: John B. Hulse.

July 23-26, National Tool & Die Manufacturers Association: Summer board meeting, Mt. Washington Hotel, Bretton Woods, N. H. Association's address: 907 Public Square Bldg., Cleveland 13, Ohio. Executive vice president: George S. Eaton.



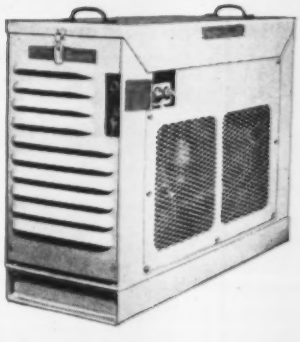
The Most Versatile Power Unit Ever Developed For Small Trucks

READY-POWER BANTAM MODEL W



Only the compact new Bantam Model W provides smooth, dependable gas-electric power that can be quickly interchanged from truck to truck.

A new high-performance unit features 12-volt automotive-type starting and ignition system plus complete choice of idling speed. Full access to engine and generator simplifies adjustment, even on the truck. Fits practically all makes of walkie and rider trucks up to 2000 lbs. *Write today for full information.*

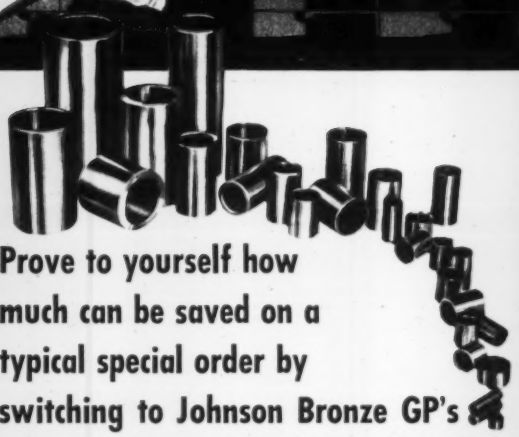


READY-POWER

The READY-POWER Co., 3824 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

Bearings off the shelf take dollars off your production costs



Prove to yourself how much can be saved on a typical special order by switching to Johnson Bronze GP's

	10 BEARINGS ½"x1"x1½"	
	SPECIAL BEARINGS	JOHNSON GP'S
PATTERN COST	$	NONE
CASTING COST	$	NONE
TOOLING COST	$	NONE
MACHINING COST	$	NONE*
SCRAP LOSS	$	NONE
TOTAL COST	$	$12.70
DELIVERY DATE	?	IMMEDIATE

Possibly slight alteration for oil grooves, holes

Johnson Bronze GP standard stock bearings can cut your production costs, whether your requirements are under a hundred . . . or in the thousands. Quality and tolerances are comparable to any special bearing, but the tooling and machining costs are eliminated.

The 900 sizes available from your Johnson Bronze distributor will fill the bill in almost every case. Check with him before you order a costly special.

Johnson Bronze

550 South Mill Street • New Castle, Pa.

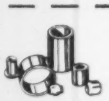
Subsidiary: Apex Bronze Foundry Co., Oakland, Cal.

JOHNSON Bearings

GRAPHITED
over 175 sizes

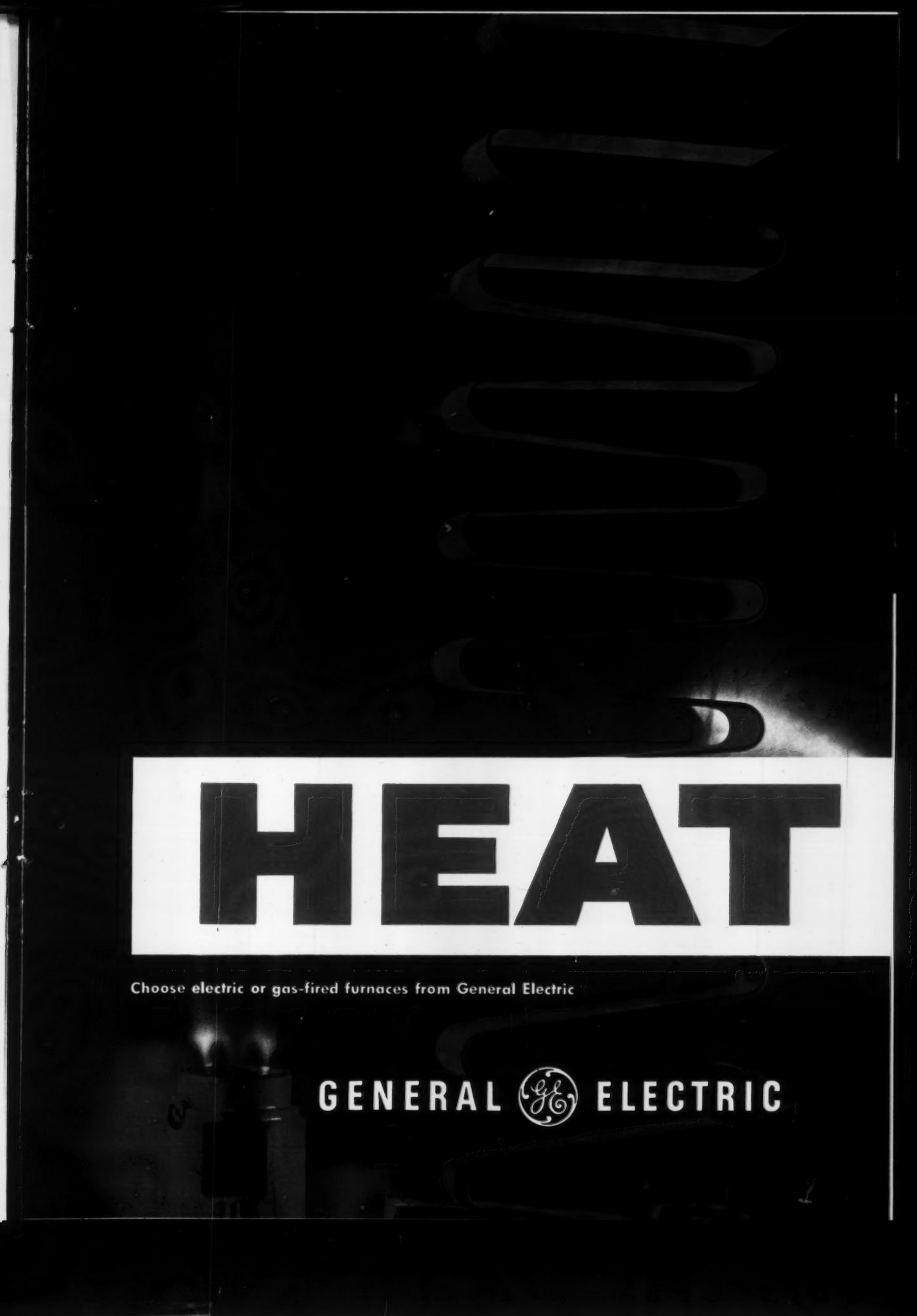
GENERAL PURPOSE
over 900 sizes

UNIVERSAL BRONZE BARS
over 400 sizes



LEDALOYL
over 400 sizes

ELECTRIC MOTOR
over 350 sizes


HEAT
Choose electric or gas-fired furnaces from General Electric
GENERAL ELECTRIC

HEAT

1. **BRIGHT ANNEALING** furnace reduced many machining costs.

FROM GENERAL ELECTRIC CAN CUT COST, IMPROVE QUALITY OF YOUR PRODUCT, TOO

General Electric furnaces speed production, cut rejects, reduce maintenance costs in hundreds of processing jobs. Your decision to call G-E heat experts *now* can save you money today and for years to come.

Nearly any product, like those shown at left, can be made better and at less cost through a heat processing modernization plan set up by General Electric. The savings you realize can pay off the initial cost of the system in two to three years—you get extra profits in years to come, cost-savings and a more saleable product today.

Here are four examples of the results achieved through the use of G-E heat processing equipment (pictured below):

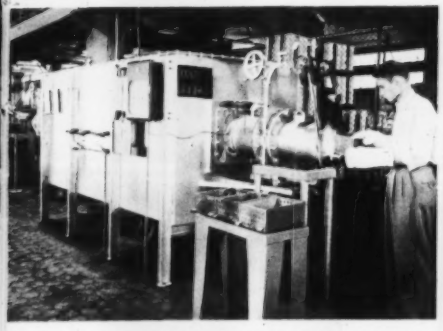
1. SAVINGS OF 25 TO 50% in the manufacture of high quality stainless steel parts were realized as a result of bright annealing in General Electric furnaces in a Midwest heat treating plant. Two years of high-speed processing with virtually no maintenance and with low operating cost have resulted in high investment return and improved products.

2. PICKLING WAS ELIMINATED by bright brazing stainless steel parts in a General Electric semi-continuous tubular retort furnace. Bright, shiny parts of high quality are now produced in less time, at lower cost.

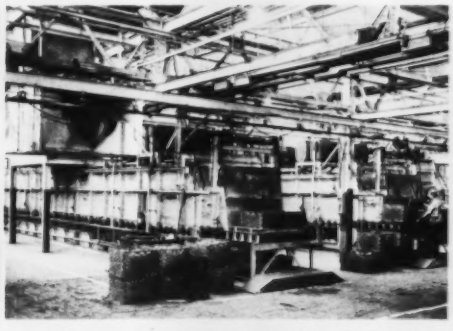
3. 75% SHORTER ANNEALING CYCLES—malleable-iron annealing with automatically-controlled General Electric roller-hearth furnaces cut cycle from 4 days to 48 hours, cut man-hours 40% for a Midwest concern. Straight-line, continuous annealing boosted process rate to 32 tons of high-quality castings every day and eliminated heat-up and cool-off time formerly required by old oil-burning furnaces.

4. 300% FASTER HARDENING of transmission components is made possible by a General Electric electronic induction heater in an automotive plant. Parts enter one end, progress on rollers to the other end and are flipped over for hardening of the reverse side at the rate of one every six seconds. Higher quality products are produced.

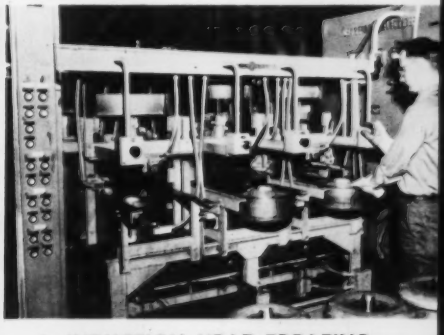
You can achieve results like these with a heat modernization system planned by General Electric to fit your needs. If you suspect that obsolete heat processing equipment is robbing you of profits, call your G-E Apparatus Sales Office. A qualified Heating Specialist will quickly figure your present costs, and your potential savings. Why not call today? Section 721-16, General Electric Company, Schenectady 5, N. Y.



2. BRIGHT BRAZING FURNACE eliminated all pickling costs.



3. CONTINUOUS ANNEALING FURNACE cut malleable-iron annealing cycle 75%.



4. INDUCTION HEAT TREATING increased production by 300%.

GENERAL ELECTRIC

ALL OF THIS LITERATURE IS AVAILABLE FROM GENERAL ELECTRIC

- ☐ Furnace and Induction Brazing, GEA-5889
- ☐ How and where to use Electric-furnace Brazing, GEA-3193
- ☐ How to Braze Stainless Steel, GER-1331
- ☐ Heat Treating Aluminum, GEA-5912
- ☐ Annealing of Malleable Iron, GEA-5797
- ☐ How to Get the Best Results from Sintering Furnaces, GER-978
- ☐ Temperature Control of Heat Treating Furnaces, GER-1206
- ☐ Protective Atmospheres for use with Industrial Furnaces, GEA-5907
- ☐ New General Electric Induction Heaters, GEA-6388
- ☐ Catalog of General Electric Heaters and Devices, GEC-1005

SECTION 721-16
GENERAL ELECTRIC COMPANY
SCHENECTADY 5, NEW YORK

Please send me the following bulletins.

GEA-....., ..., ..., ..., ...,

GER-....., ..., ..., GEC-.....,

NAME.....

TITLE.....

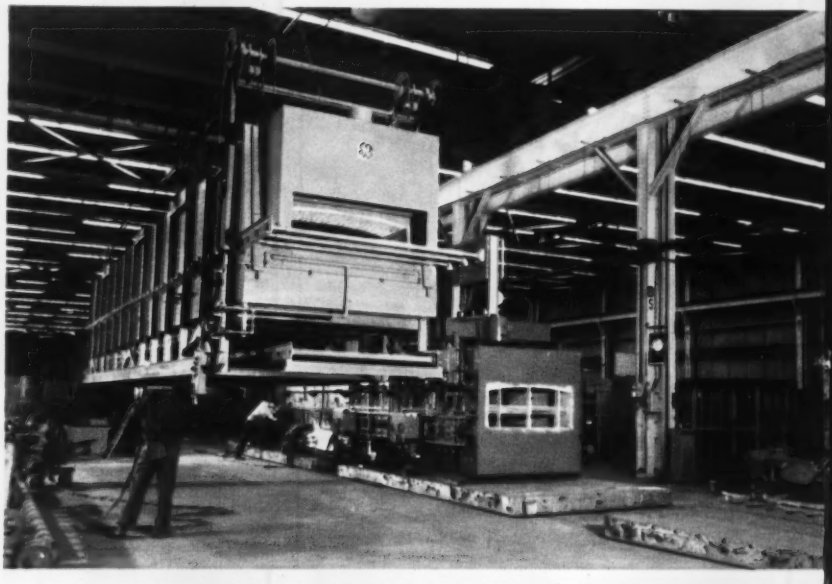
COMPANY.....

ADDRESS.....

CITY..... STATE.....

G-E MATERIALS HANDLING SYSTEMS SPEED PRODUCTION

Modernization and mechanization of heat processing systems speed production, give uniformity of product, improve quality, and reduce your manufacturing costs. General Electric can supply materials handling equipment, atmosphere producers, instruments, quenching equipments and furnaces or induction heaters to give you "one source" responsibility for your heat treating line.



FACTORY ASSEMBLY REDUCES YOUR INSTALLATION TIME

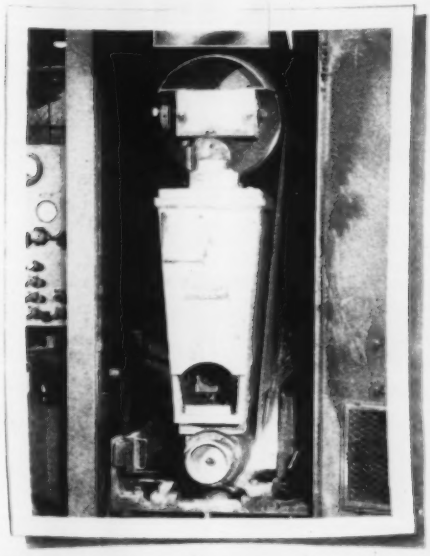
General Electric can completely assemble large furnaces in its Shelbyville, Indiana plant. This means that when you buy from General Electric you can have your piped and wired furnace on the line more quickly and with lower over-all first cost. Experienced furnace builders handle every step of construction and General Electric provides either supervision or complete installation at your plant.

Progress Is Our Most Important Product

GENERAL ELECTRIC

A 3M Case History Report

GRINDING PRODUCTION INCREASED 10% WITH 3M ABRASIVE BELTS



MANUFACTURER: Houdaille Industries, Inc.

ADDRESS: Huntington, W. Virginia

PRODUCTS MANUFACTURED: Auto Bumpers

HOW 3M ABRASIVES ARE USED: "PRODUCTION" Brand Paper Belts are used to pre-finish hot-rolled steel alloy sheets prior to forming and plating.

OPERATIONAL DATA ON 3M METHOD: 3M Paper Belts in grits 80, 100, and 150 are used on a 12-head fully automatic sheet-polishing line. New and used belts are alternated in a specific sequence to get maximum belt life and best finish.

PROVEN ADVANTAGES OF 3M METHOD: Customer's own tests established a 10% increase in production using 3M belts. 3M has been selected as major supplier on the basis of this, plus consistent quality and expert engineering assistance provided.

OTHER 3M ABRASIVE PRODUCTS IN USE: "TRI-M-ITE" Resin Bond Cloth "PG" Wheels; "Three-M-ite" Resin Bond Cloth Belts, and 3M Type "C" Fibre Discs are used for occasional clean-up and blending operations.

WANT MORE INFORMATION? Send for free manual, "Finishing Steel with 3M Coated Abrasives". Write to 3M Co., St. Paul 6, Minn., Dept. GJ-68.

"PRODUCTION," "TRI-M-ITE," and "THREE-M-ITE" are registered trademarks of 3M Company, St. Paul 6, Minn. Export: 99 Park Ave., New York. Canada: London, Ontario.

3M Coated Abrasives

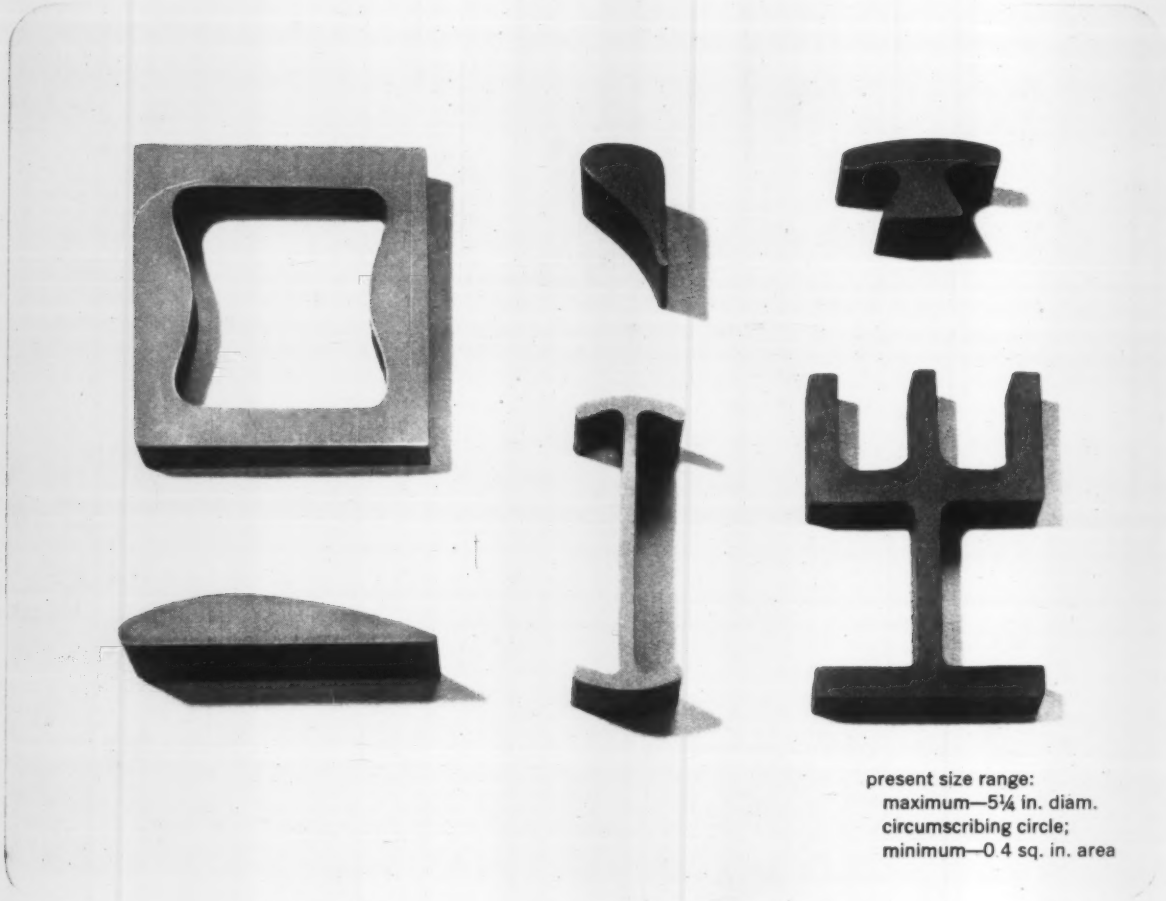
"PRODUCTION" PAPER BELTS

MINNESOTA MINING AND MANUFACTURING COMPANY

...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

Experience**—the added alloy in **A-L Stainless, Electrical and Tool Steels



present size range:
maximum—5¼ in. diam. circumscribing circle;
minimum—0.4 sq. in. area

- 321 Stainless
- 410 Stainless
- 405 Stainless
- SAE 1020
- 304 Stainless
- SAE 4340

Here's how highly intricate steel extrusions from Allegheny Ludlum help you cut costs

Allegheny Ludlum Extrusions can help you cut costs, save money. If you are now rolling, casting or machining steel parts like these, consider the cost-cutting features inherent in extruding metal, already proved by non-ferrous extrusions during the last 10 years.

A-L high-quality Steel Extrusions can save you money on four very important counts. (1) Orders are taken in quantities as small as 40 pounds. No large tonnage rolling requirements. (2) Charge for die design is low—under $200. No expensive rolls to cut. (3) Machining costs are slashed to a minimum; there's no waste of material. (4) Extruding saves time from the order to availability of finished parts.

There is no limit to what steels can be extruded. Allegheny Ludlum works everything from all stainless grades to carbon and electrical steels, high temperature alloys, nickel alloys and even metals such as zirconium.

Prove to yourself that extruding steel can save you money. Write for Allegheny Ludlum's 12-page technical bulletin, full of process explanations, material properties, design tips, etc. Or contact your nearest A-L office for technical assistance.

Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pennsylvania. Address Dept. S-6.

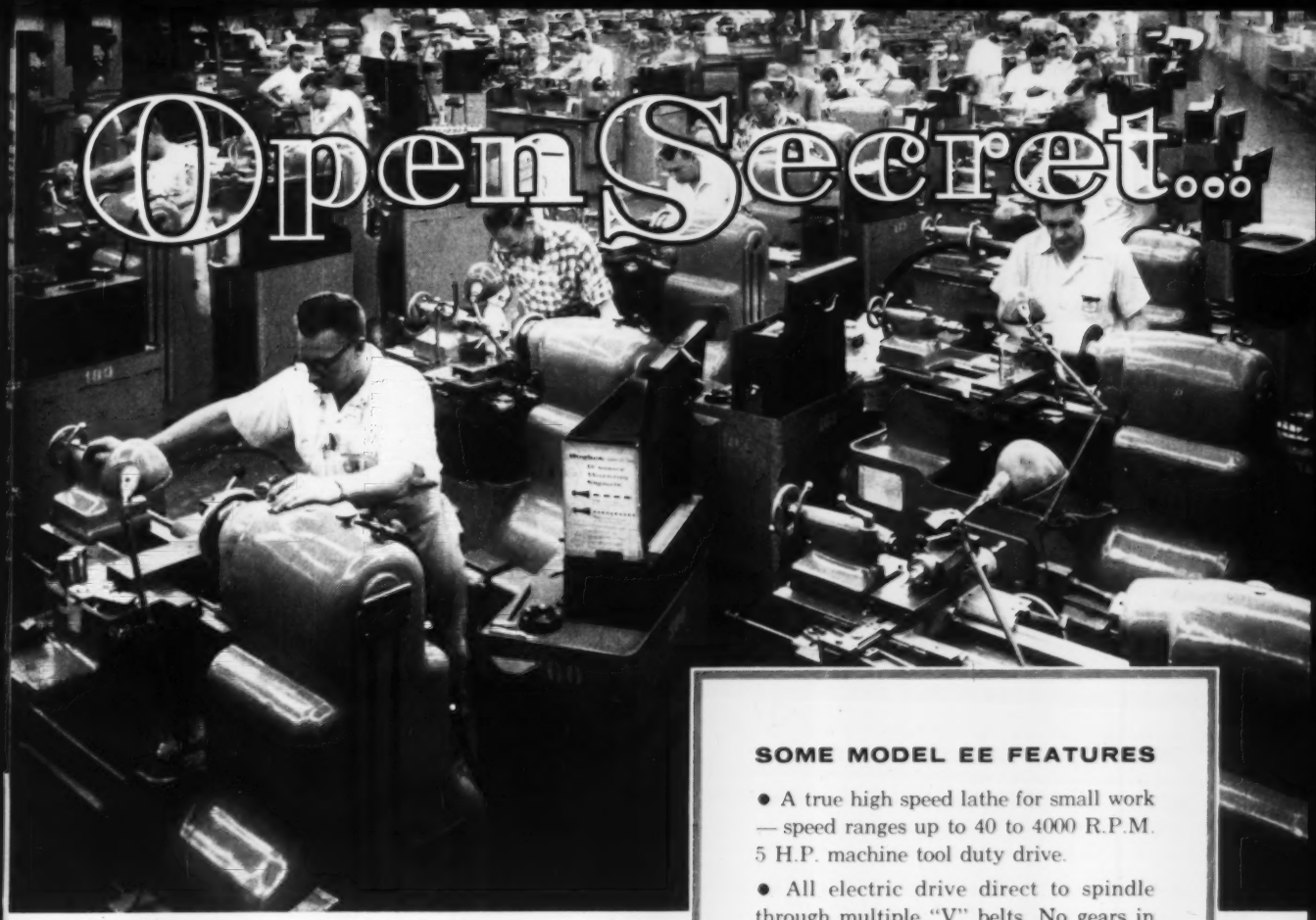
WSW 7120

ALLEGHENY LUDLUM

for warehouse delivery of Allegheny Stainless, call RYERSON

Export distribution: AIRCO INTERNATIONAL

EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT



Open Secret...

about a Hush-Hush operation

What's being produced here is restricted; but *where* and *how* it's made is a story in itself. This photo shows a section of the Experimental Machine Shop of the Systems Development Laboratories, Hughes Aircraft Company, Culver City. You know that output from a shop like this doesn't come from clunkers; obviously these machine tools are carefully chosen for the utmost in speed, versatility, and precision. If you can count 16 lathes (we can!) you'll be counting *16 Monarch 10" Model EE Sensitive Precision Toolmaker's Lathes!* And this is only a small percentage of the Monarch lathes used in the Hughes plant.

Just take a look at the partial list of Model EE features and you'll see why it's unnecessary for us to generalize about the machine — though we'd like to emphasize again the value to users of the all-electric drive direct to spindle and the great range of speeds. And that the Air-Gage Tracer can be applied.

Here's a lathe in a class by itself. Our Booklet 305-1 tells all — and it's no secret! Write or call —

SOME MODEL EE FEATURES

- A true high speed lathe for small work — speed ranges up to 40 to 4000 R.P.M. 5 H.P. machine tool duty drive.
- All electric drive direct to spindle through multiple "V" belts. No gears in headstock — an absolute must for small high precision work.
- 60 thread changes and 50 feed changes! This, plus wide speed range, enables machine to handle at top efficiency any job within its swing capacity.
- For thread chasing up to 100% faster, has exclusive combination of electric leadscrew reverse and variable reverse speed control. Available also without leadscrew and other thread chasing parts.
- Easy, fatigue-free operation. Base design lets operator work close in comfort.
- Flame hardened and ground ways for both carriage and tailstock. Bed all in one piece — no inserts.
- Thousands of these machines in use attest to their wide acceptance for the turning of small precise work of all kinds.

Monarch
TURNING MACHINES
For a better turn faster
. . . Turn to Monarch

THE MONARCH MACHINE TOOL COMPANY, Sidney, Ohio

A coating in **COLORS** that really

STICKS TO GALVANIZED METAL

RUST-OLEUM®
GALVINOLEUM® COATINGS

Paint peeling off galvanized metal? Here's the *practical* answer to an *everyday* problem!

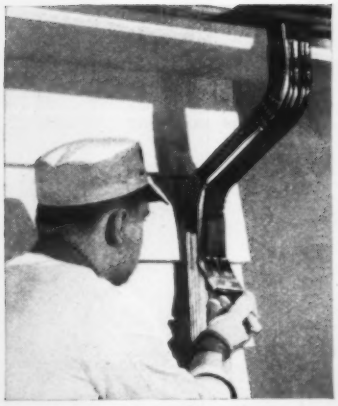
- *First*— You can apply Galvinoleum right over brand new galvanized metal without etching, without weathering—saving costly, tedious surface preparation.
- *Second*—Galvinoleum provides lasting protection for older galvanized surfaces, too. Just be sure that all former coatings are removed before applying Galvinoleum.
- *Third*— You can beautify as you protect in your choice of four attractive Galvinoleum colors—Red, Gray, Green, Metallic.

Look around! How many galvanized metal surfaces do you have—gutters, downspouts, roofs, siding, heating and air conditioning ducts, etc.? Galvinoleum used now can prevent peeling "headaches" later. Make it a point to check with your Rust-Oleum Industrial Distributor for a free test demonstration or application. He'll be happy to consult with you on your galvanized metal maintenance problems. Attach the coupon to your letterhead for a free test sample and name of your nearest Rust-Oleum Industrial Distributor—there is no obligation.

RUST-OLEUM®

Distinctive as your own fingerprint.
Accept no substitute.

STOPS RUST!®

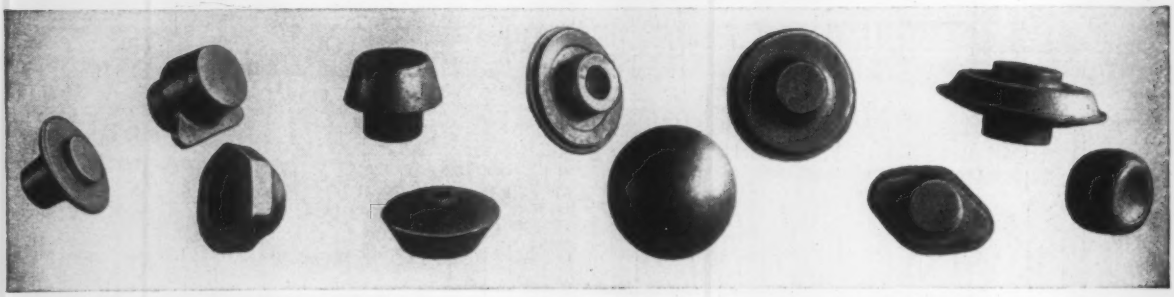


ATTACH TO YOUR LETTERHEAD FOR FREE TEST SAMPLE OF GALVINOLEUM®

Rust-Oleum Corporation
2648 Oakton St. • Evanston, Illinois

Please send me complete literature and a free test sample of Galvinoleum in the color indicated:

- ☐ Red
- ☐ Gray
- ☐ Green
- ☐ Metallic

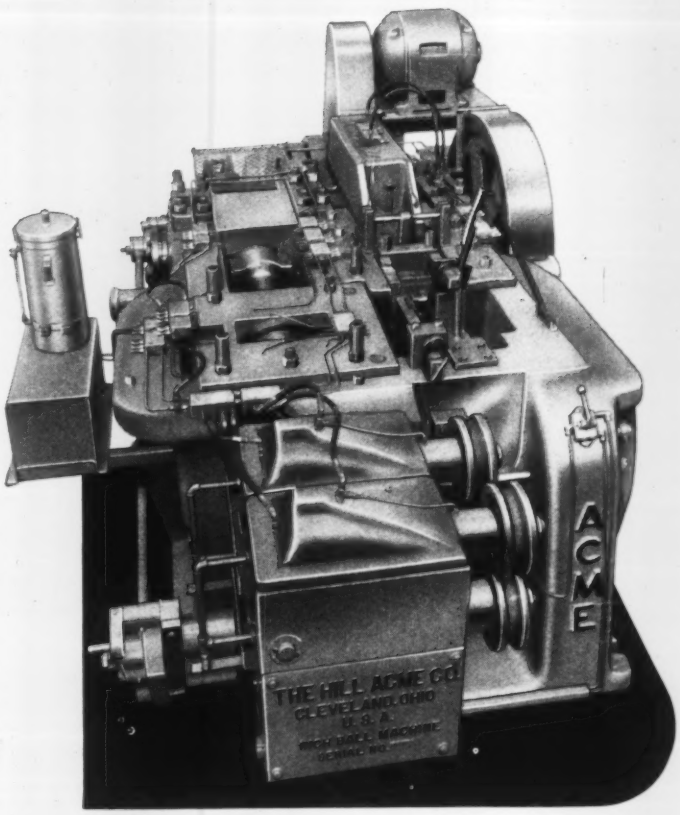


Typical Shapes Produced by ACME Single Blow Forging Machines

SINGLE BLOW FORGINGS
AT 135 PER MINUTE

One man operating this ACME single blow solid die forging machine is producing 135 one inch hard steel balls per minute from 11/16" stock. Automatic feed rolls carry bar stock at proper speed for maximum efficient operation. Adequate safety devices prevent jamming of the die.

ACME solid die forging machines are rated according to the size ball they will forge. Machines are built from 1" to 5" capacity.



Complete information is given in Bulletin SB-57.

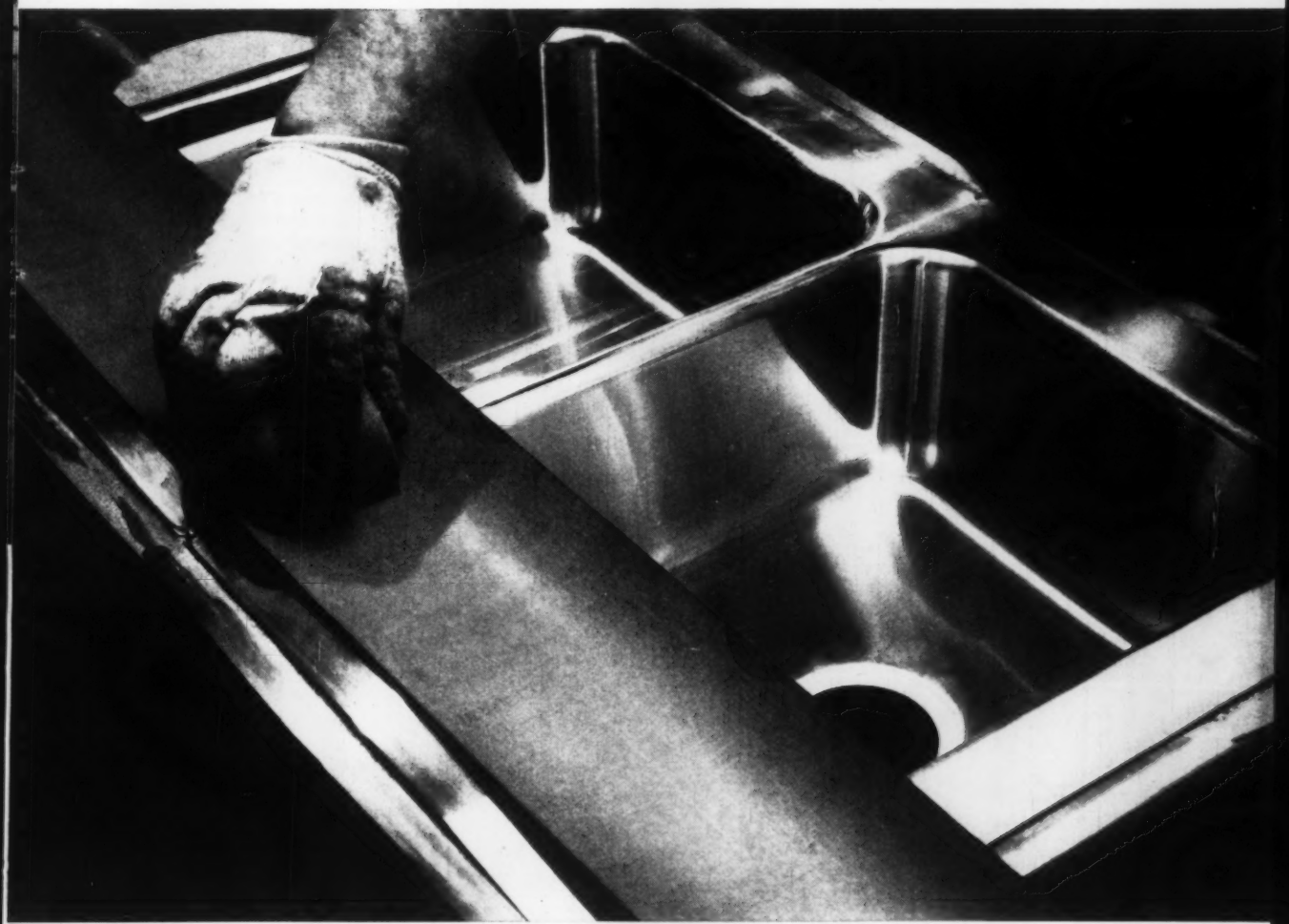
The HILL ACME Company

1207 W. 65th STREET • CLEVELAND 2, OHIO

HILL ACME TOOLS FOR INDUSTRY

Manufacturers of: "ACME" FORGING • THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • BAR-BILLET SHEARS
"HILL" GRINDING & POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • "CLEVELAND" KNIVES • SHEAR BLADES

Stainless Steel
polishing information:



*Play it cool and don't press

You can polish Stainless Steel to a mirror finish but you can't rush the job. Too coarse a grit, too much speed, too much pressure might scorch or discolor Stainless because steels of this family are not rapid heat conductors.

Use light pressure on the polishing agent, and remember that you can't get a desired finish any faster just because you press harder. Take your time. This is by way of saying that Stainless Steel isn't difficult to fabricate, it's just different.

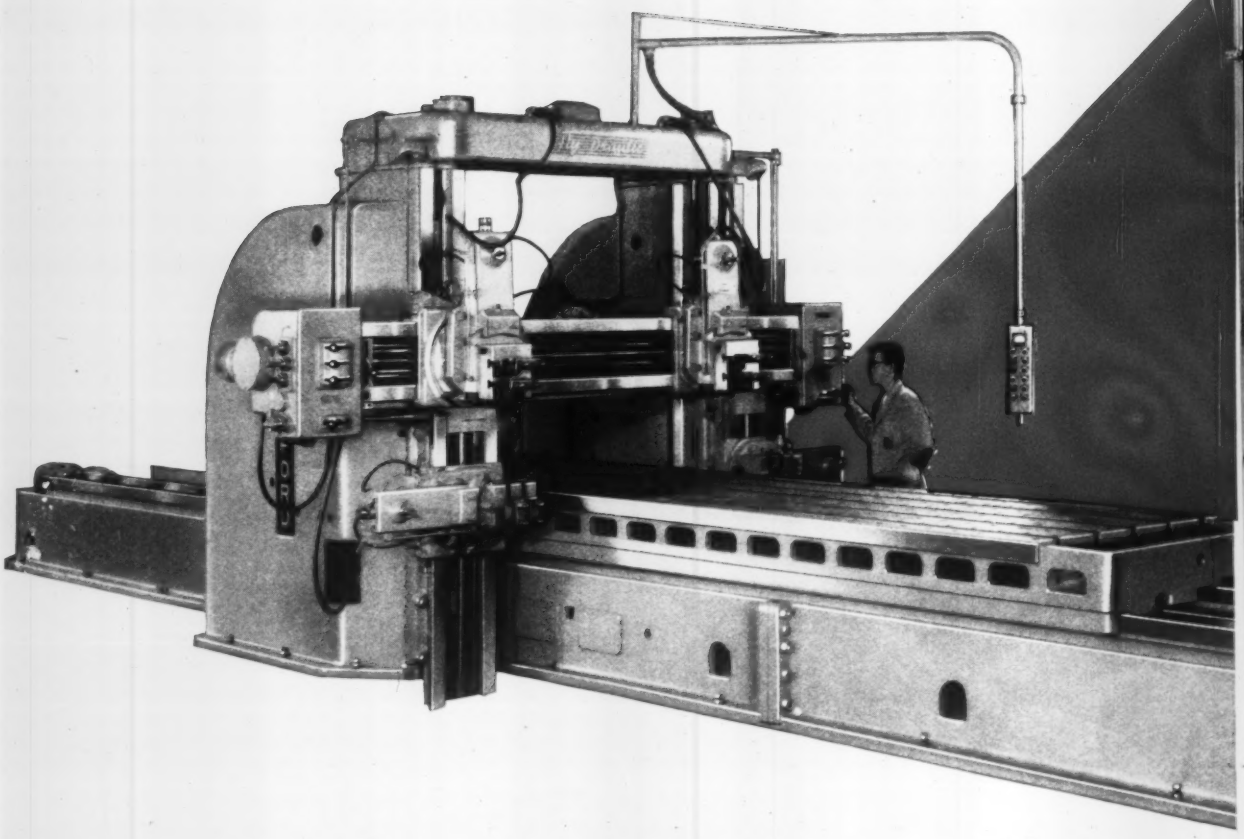
All your work on Stainless will be expert if you follow the "Stainless Steel Fabrication Book." If you don't have a copy, we'll be glad to send you one. Write on your company letterhead to United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

USS is a registered trademark

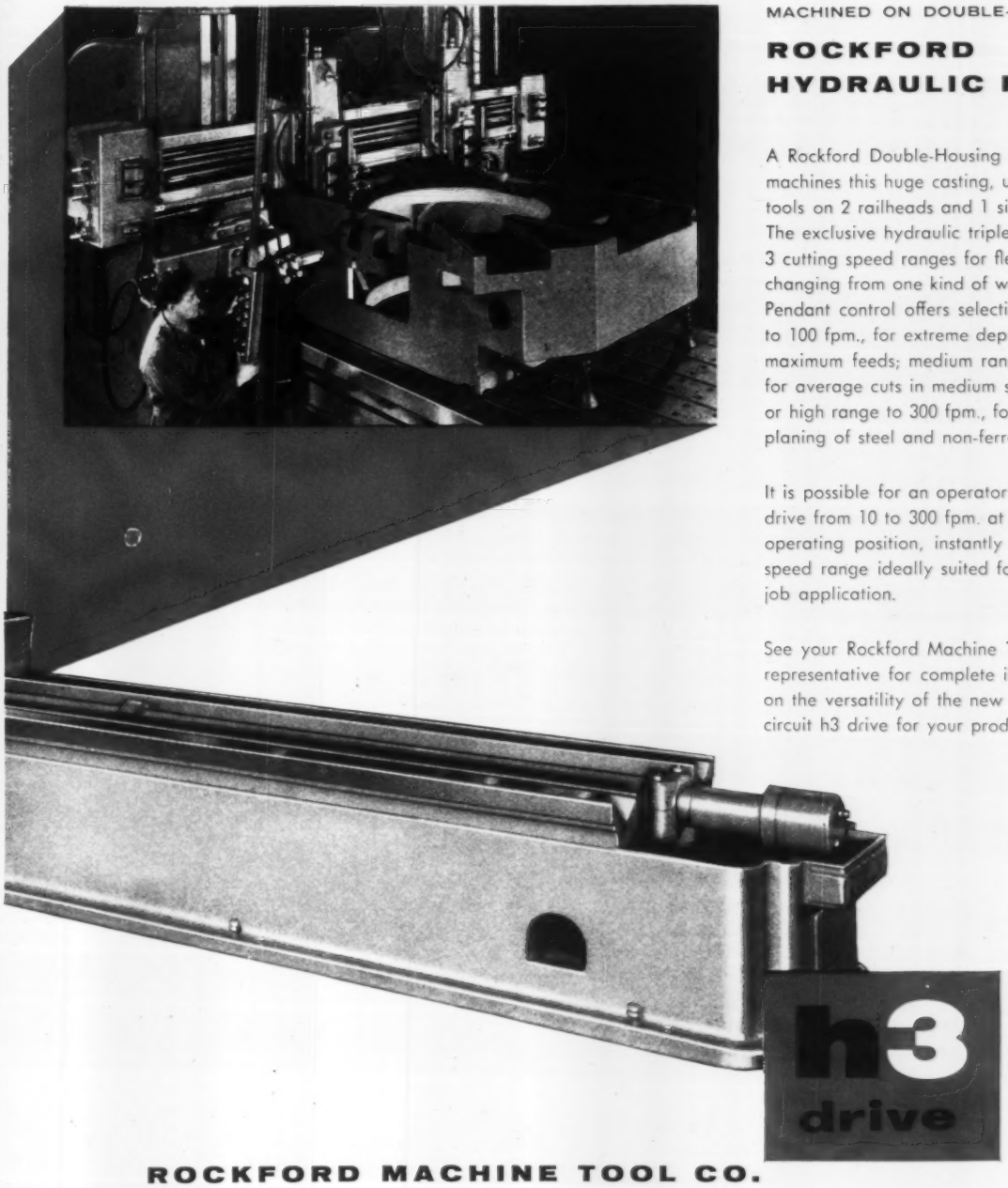
United States Steel Corporation–Pittsburgh
American Steel & Wire–Cleveland
Columbia-Geneva Steel–San Francisco
National Tube–Pittsburgh
Tennessee Coal & Iron–Fairfield, Alabama
United States Steel Supply–Warehouse Distributors
United States Steel Export Company

USS United States Steel

versatility of triple circuit h3 drive



shown with **4-TON** work piece!



MACHINED ON DOUBLE-HOUSING

ROCKFORD HYDRAULIC PLANER

A Rockford Double-Housing Hydraulic Planer machines this huge casting, using carbide tools on 2 railheads and 1 sidehead. The exclusive hydraulic triple circuit supplies 3 cutting speed ranges for flexibility in changing from one kind of work to another. Pendant control offers selection of low range to 100 fpm., for extreme depths of cut and maximum feeds; medium range to 150 fpm., for average cuts in medium steel or cast-iron; or high range to 300 fpm., for carbide planing of steel and non-ferrous metals.

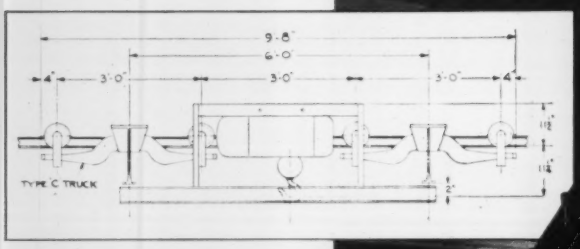
It is possible for an operator to adjust the h3 drive from 10 to 300 fpm. at the normal operating position, instantly selecting the speed range ideally suited for his individual job application.

See your Rockford Machine Tool Company representative for complete information on the versatility of the new hydraulic triple circuit h3 drive for your production work.

h3 drive

ROCKFORD MACHINE TOOL CO.

2500 KISHWAUKEE STREET • ROCKFORD, ILLINOIS



Lifting this three-ton condenser and moving it about is made an easy one-man job with the Tramrail crane.

HIGH LIFT UNDER LOW ROOF *Solves Handling Problem*

A double-girder, high-lift Cleveland Tramrail crane proved the solution of a handling problem at The Refrigeration Engineering Co., Los Angeles, Calif., manufacturers of evaporators and condensers of all sizes up to 100-ton rating.

Because many of their units are high and heavy, and the roof is very low, it was necessary to develop a special crane design that permits utilizing space between the crane girders. How well this was engineered is evidenced by the fact that while the distance from floor to the low part of the roof truss is only 11'-10¼", the hoist hook can be raised 10'-0" above the floor.

The crane and hoist are motor-driven, push-button controlled. The trolley is hand-propelled. The hoist has a capacity of three tons and travels at 18 feet per minute.

GET THIS BOOK!
BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7880 East 284 Street, Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

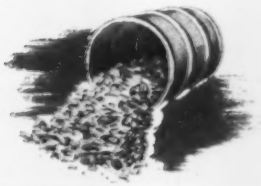
"Pure electrolytic manganese makes my melting simpler"

When melting quality steels or non-ferrous alloys, your melting practice is greatly simplified by using ELECTROMET electrolytic manganese—99.95 per cent pure. You can easily control carbon, phosphorus, and silicon because electrolytic manganese contains less than 100 parts per million of these elements. This is particularly helpful when producing:

• Chromium-nickel stainless steels, especially the chromium-nickel-manganese and extra-low carbon grades. • Low-carbon deep-drawing sheet steels. • High-temperature, non-ferrous, and electrical resistance alloys.

For adding nitrogen and manganese together, 4½ and 6 per cent nitrogen-bearing grades are available. These grades are especially useful when producing free-machining and low-carbon sheet steels. For details, contact your ELECTROMET representative.

ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y.



The thick plate of ELECTROMET electrolytic manganese penetrates the slag and goes into solution rapidly.

Electromet
FERRO-ALLOYS AND METALS

UNION CARBIDE

The terms "Electromet" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

USS Amerstrip..

Shown here is the difficult deep-drawing operation for the Amerock window sash lifts. The sash lifts are being blanked, drawn, pierced and trimmed on a 60-ton Rockforn Punch Press at the rate of 1100 per hour. USS Amerstrip has performed so successfully on this operation that it is now used exclusively for this window lift.

. . solves difficult double-draw problem

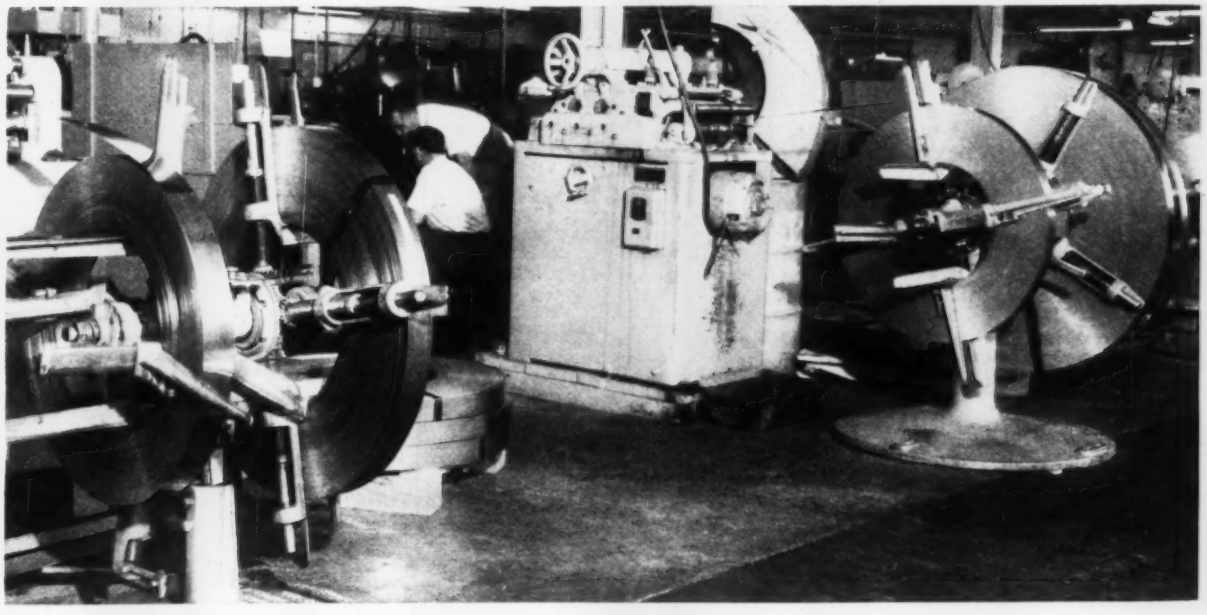
. . maintains finish for plating

When the Amerock Corporation of Rockford, Illinois, decided to make their unusual sash lift from strip steel instead of another metal, they ran into difficulties. The several different types of strip steel they tried failed to stand up under the severe forming operation. American Steel & Wire Division was then consulted, and their recommendation for a 4 Temper, #2 Finish, Deep-Drawing USS Amerstrip proved ultimately to not only fulfill the deep drawing requirements, but permitted satisfactory plating.

Joe Ellis, foreman of Amerock Blanking Department, said, "AS&W did an excellent job in developing a strip steel which would do this difficult double draw, yet maintain its finish for plating. We have had more trouble from other steels doing simpler jobs."

In the past 28 years the Amerock Corporation has grown to be the world's largest manufacturer of cabinet hardware. In addition to the window lift, many other items in their complete line of functional hardware are fabricated from USS Cold Rolled Amerstrip, including drawer pulls, hinges, knobs and cabinet hardware.

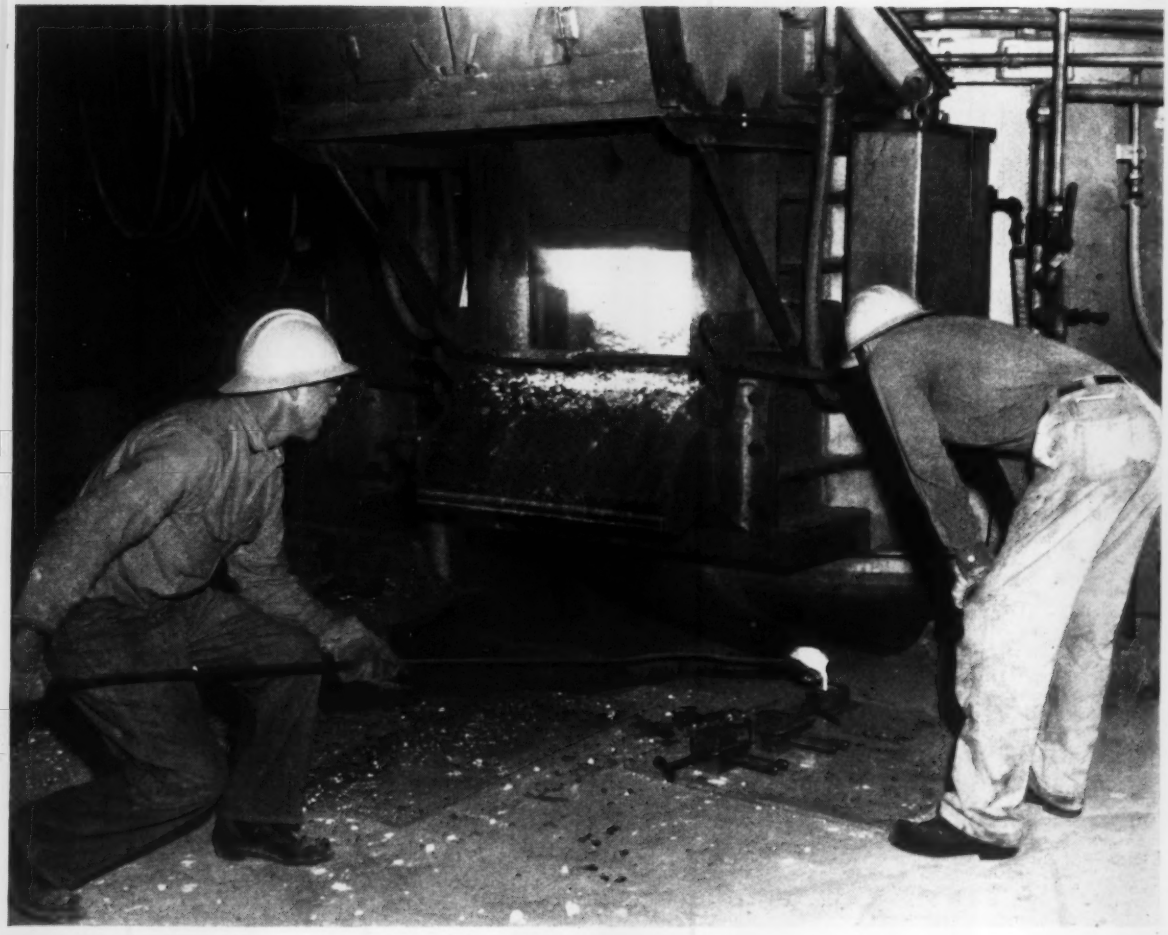
American Steel & Wire. General Offices: Rockefeller Bldg., Cleveland 13, Ohio. *USS and Amerstrip are trademarks*



Coils of USS Amerstrip are being fed into the Lytell Straightening Machine. When the smaller coil is gone, the holder is pivoted to permit the remaining coil of Amerstrip to be fed into the machine.

American Steel & Wire Division of USS United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad



Wider variety of alloys than ever before now available for castings from Standard

From Standard, you can now enjoy the same superior, personalized service—and rapid delivery—on alloy steel castings as you have enjoyed in the past on carbon steel castings.

Our newly expanded facilities—including installation of a newest design electric furnace—make it possible for us to give you even more complete service than ever before.

We invite you to discuss your next casting needs with us. You will appreciate our personal interest in your problems—and our economical methods of solving them. Write Dept. 2-F.

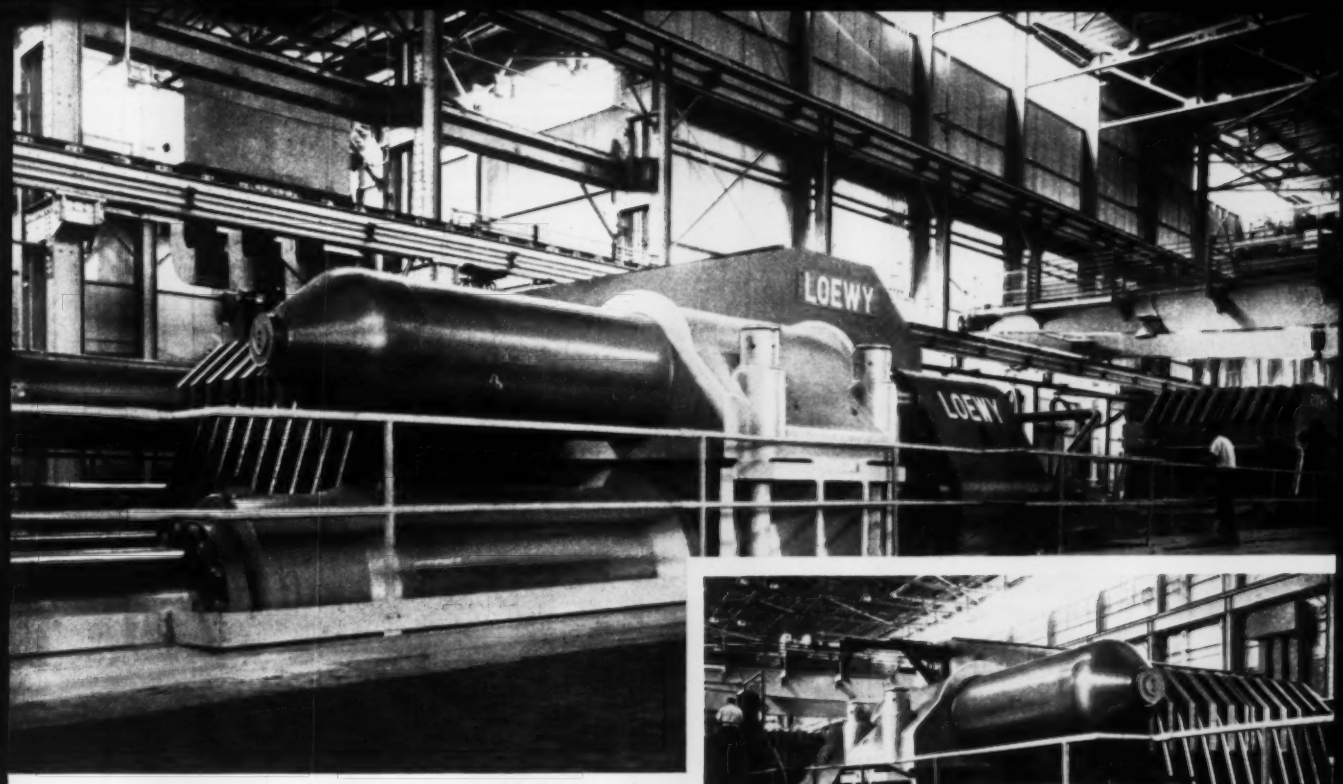
Standard Steel Works Division

BALDWIN · LIMA · HAMILTON

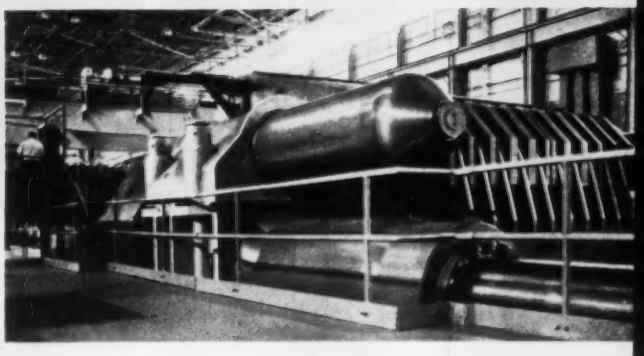
BURNHAM, PENNSYLVANIA

Rings • Shafts • Car wheels • Gear blanks • Flanges • Special shapes

BALDWIN BLH LIMA-HAMILTON



8000-ton plate stretcher-leveller as seen from the cylinder end and stationary grip head. Movable grip head is in rear.



8000-ton plate stretcher-leveller as seen from the cylinder end, operator's side.

Huge Loewy stretcher-leveller is only one in world that can handle plate up to 152 in. wide

In 1947 Loewy-Hydropress built an 825-ton-capacity stretcher-leveller for heavy plate—world's largest. Ever since, Loewy engineers have paced the field. Recently they put an 8000-ton model into operation at Alcoa's Davenport, Iowa, plant—in hardly more than a decade they had developed one 10 times as powerful as the giant of 1947. Over 160 ft. long and weighing more than 5,500,000 lb., this machine can grip in its massive jaws rolled aluminum plate up to 152 in. wide, 95 ft. long, and 6 in. thick, stretch-straightening it with a pull of 16,000,000 lb.

Loewy stretcher-levellers are pushbutton operated by one man. Uneven and severely warped plates and sheets of aluminum, carbon steel, stainless steel, nickel-clad steel, and other materials are straightened to fault-free flatness and smoothness within seconds. During stretching the material is stressed beyond its yield point. This equalizes the stress over the entire cross-section and prevents warpage and distortion during later machining operations, while simultaneously improving physical properties.

Loewy-Hydropress will build stretcher-levellers for plate and sheet and stretcher-straightener-detwisters for rod and sections in all sizes and capacities, from 100 to 8000 tons, even to much higher capacities if required.

Write us at Dept. B-6 if you would like to know more about these powerful auxiliaries to rolling mills and extrusion presses in which Loewy specializes.

Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills • Hydraulic machinery • Industrial engineering

BALDWIN BLH LIMA-HAMILTON

THE STEEL SCAFFOLDING COMPANY, INC.
850 HUMBOLDT STREET
BROOKLYN 22, N. Y.
EVergreen 3-5510

MANUFACTURERS OF Trouble Savers SINCE 1912

January 9, 1957

Mr. C. H. Lausberg
Area Development Department
West Penn Power Company
Cabin Hill
Greensburg, Pennsylvania

Dear Clem:

Needless to say, I am more than pleased that the final decision reached was on locating our new plant in Western Pennsylvania. In no small measure, a good deal of the credit rests with you and your associates and your untiring efforts. Your clear presentation of facts simplified our problem of sorting out the myriad of claims that so many communities set forth. It was gratifying to note that the Greater Uniontown Industrial Fund was well aware of the role you played and so acknowledged by the "plug" in the local paper announcements.

Many thanks for the Directory of Products and Manufacturers. It will be very helpful for future reference.

Sincerely,

Bert

N. A. Engelen, Secretary

SCAFFOLDING FOR EVERY PURPOSE

WEST PENN POWER

an operating unit of the
WEST PENN ELECTRIC SYSTEM

Hello . . .

I'm Charlie Fife . . .

This letter is very complimentary. But we won't accept all that credit.

Our part is quite simple. All we do is determine your requirements. Once we've done that, the only skill is to make sure that opportunities in our area apply to *you*. You see, we live here . . . know in detail the *favorable tax climate* that encourages industry. We know the localities that offer *100% financing* plans at low interest. We know where *labor* and *skills* are available.

We take credit for just this: We like to add two plus two and get four—no fractions. If you'd like us to work on your side of the equation, let us know. We've got a pretty good record of fours. Won't you let us prove it . . . in confidence, of course.

CHARLIE M. FIFE, *Manager*
Area Development Department

WESTern PENNsylvania

Area Development Department,
West Penn Power Company,
Cabin Hill, Greensburg, Pennsylvania

☐ Please have representative call

☐ Please send "Plant Location Services" booklet S-5

Yes, I'm interested in WESTern PENNsylvania. ☐ Please send "Directory of Products & Manufacturers"

Name _____ Title _____

Company _____ Street _____

City _____ Zone _____ State _____

Specialties of the House

ROEBLING is a specialist in galvanizing, with practically unmatched facilities for producing galvanized wire in enormous quantities and in complete size ranges. Hot galvanized is available in sizes from .283″ to .035″. . . Roegal (drawn galvanized) from .187″ to .005″.

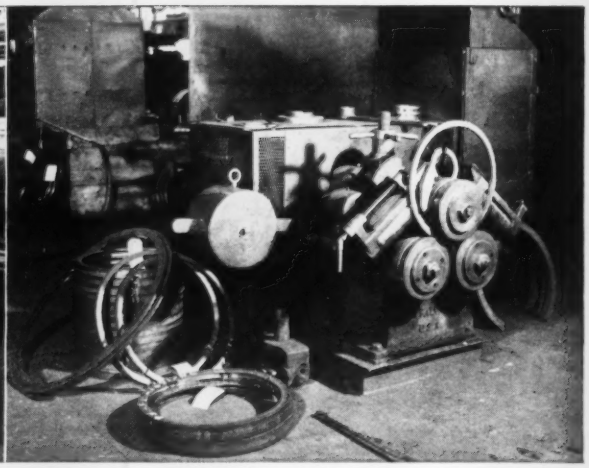
You *pay* for the best when you buy galvanized wire. Make sure you *get* it—specify Roebling! Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, N. J.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

Roebling... Your Product is Better for it

UP TO 104-FT. DIAMETER RINGS for internal bracing of large elevated tanks — cold bent from heavy angles, leg-in, on "Buffalo" No. 3 Horizontal Bending Roll, to fractional-inch accuracy — by a leading fabricator. Machine uses no dies, only standard rolls.



FLATS BENT ON EDGE into spirals, which are then cut to circles and butt-welded — a high-production method used by major motor manufacturer for stator ring output. The "Buffalo" Vertical Bending Roll makes the job easy. Rolls are readily changed, adjusted to the shape and diameter.

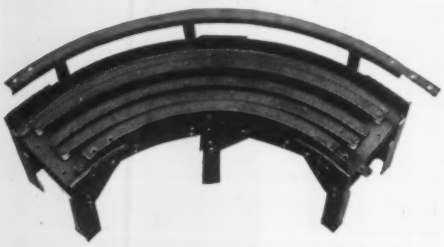
"BUFFALO" BENDING ROLLS ARE PAYING THEIR WAY IN DIE-LESS COLD BENDING

If you bend structurals into arcs, circles, spirals or segments in any quantities, there is no cheaper method than with a "Buffalo" Bending Roll. Bridge fabricators, steel mills, heavy equipment builders, aircraft and automotive users — metal working industries by the score — enjoy the ease and speed with which their "Buffalo" Bending Rolls turn out commercially accurate curves.

Steel warehouses have brought in profitable, new fabrication business by purchasing a Bending Roll. A mower manufacturer adapted his roll to apply the twist to his reel blades. Many firms use special rolls for 1001 highly specialized operations. All agree on the exclusive "Q" Factor* features of rigid, lasting construction, easy roll changes and diameter adjustments, simple operation requiring no highly skilled personnel — and no expensive die requirements.

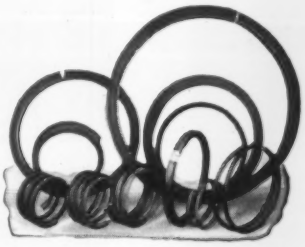
Write for Bulletin 352 and check details on the model to put your bending operations on a paying basis — or bring profitable new business into your plant.

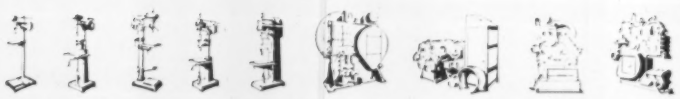
**The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.*



CONVEYOR MANUFACTURER gets fast output of curved sections involving angles and flats bent into arcs by "Buffalo" Bending Roll.

Any structural shape including tubes and pipes are easily and accurately bent to desired curves.





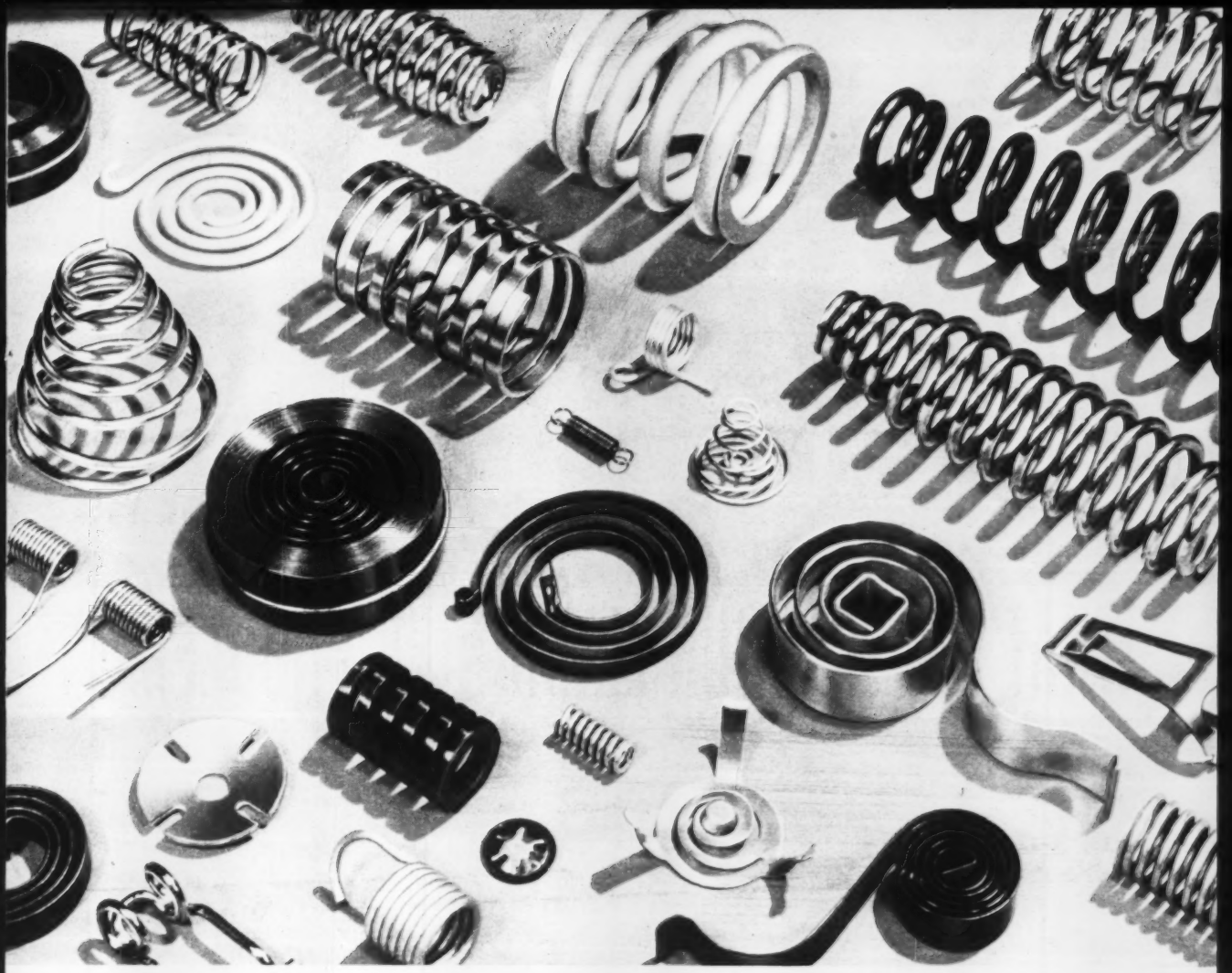
ESTABLISHED 1877 "Buffalo" MEMBER N.M.T.B.A.

BUFFALO FORGE COMPANY

158 MORTIMER STREET — BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING PUNCHING SHEARING BENDING



Which of these did you use today?

Alarm wake you this morning? Stove timer work all right? Did you drive to work . . . take a business trip by air . . . press a light switch . . . use a dictating machine . . . or home workshop motor? Then you, or someone in your home or business, used a spring. With a product-mix like this it's practically certain that we enter your daily living, tucked anonymously away in nationally known and respected brands of all sorts of articles.

Write for a copy of "How to Solve Your Spring Design Problems" to learn how early consultation with the spring manufacturer results in improved design and performance.

Associated Spring Corporation

General Offices: Bristol, Connecticut

Wallace Barnes Division, Bristol, Conn. and Syracuse, N. Y.
B-G-R Division, Plymouth and Ann Arbor, Mich.
Seaboard Pacific Division, Gardena, Calif.
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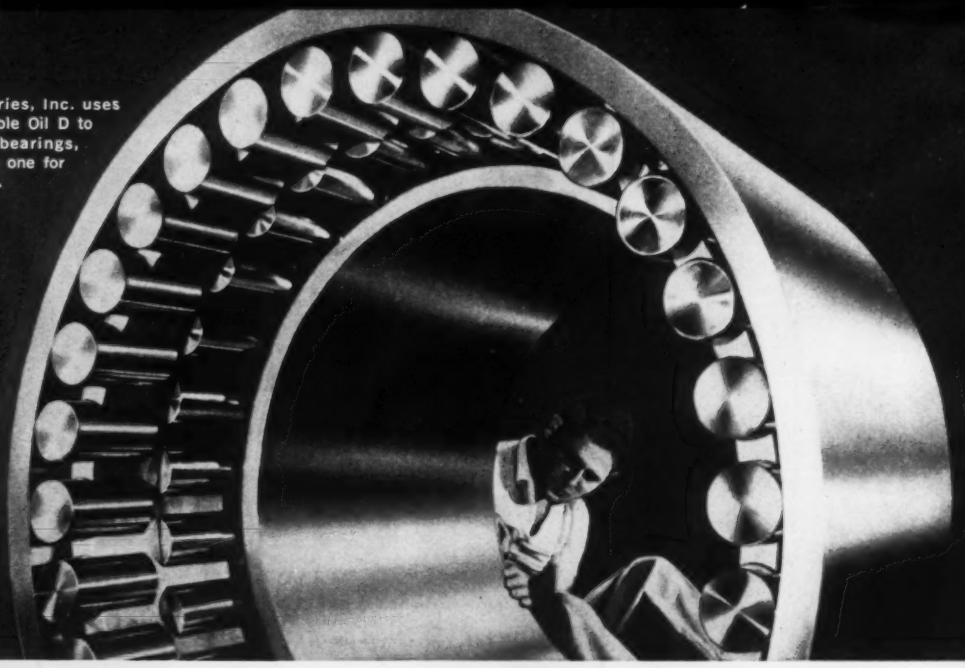
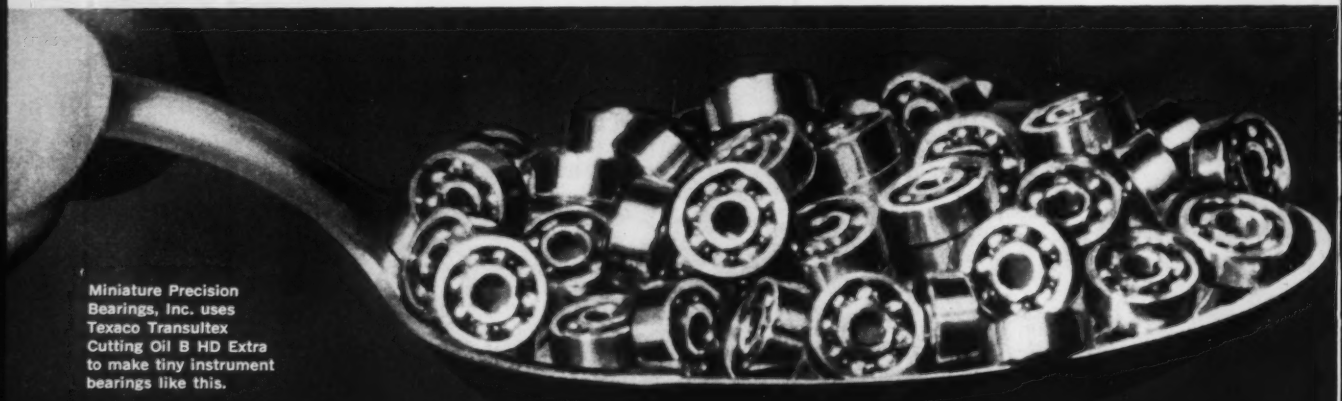
Canadian Subsidiary: The Wallace Barnes Co., Ltd., Hamilton, Ontario and Montreal, Quebec

5804 © 1958 ASSOCIATED SPRING CORPORATION



SKF Industries, Inc. uses Texaco Soluble Oil D to make giant bearings, such as this one for a rolling mill.

WHAT SIZE IS YOUR MACHINING PROBLEM?



Miniature Precision Bearings, Inc. uses Texaco Transultex Cutting Oil B HD Extra to make tiny instrument bearings like this.

If you make anti-friction bearings of any size, you need grinding fluids that prevent rust and produce uniformly fine finishes. These fluids must also take into account the bearing material and the operating condition of your machines. They must have specific stability, cooling properties and ability to settle grinding dirt quickly. Otherwise your production drops and the number of rejects rises.

The makers of the small and large bearings shown above get fine bearing finishes and high production by using Texaco. There is a complete line of Texaco Cutting, Grinding and Soluble Oils to help improve machining on every job.

Take this tip. Use Texaco Cutting, Grinding and Soluble Oils—they'll help you produce faster, better and at lower cost, whether your product is the largest or the smallest.

Let a Texaco Lubrication Engineer suggest the best ones for your jobs. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

Metalworking Outlook

Labor Sidelight

"Rational negotiations with the International Union of Electricalworkers have been virtually impossible because of the disgraceful conduct of spokesmen representing the union at the bargaining table," charges General Motors Corp. In an unusual blast, GM charges IUE President James B. Carey and certain other union spokesmen with using "foul, profane, obscene, and insulting language . . . which is a disgrace to the labor movement and has made a travesty of collective bargaining." IUE settlements with GM are expected to parallel those negotiated with the United Auto Workers, when they are made (see Page 57).

Aircraft Firms Sign

The International Association of Machinists and the UAW have reached agreement on two-year contracts for most plants of Lockheed Aircraft Corp., North American Aviation Inc., Convair Div. of General Dynamics Corp., and Douglas Aircraft Co. Inc. New settlements provide increases averaging about 22 cents an hour in basic wages and fringe benefits.

Supreme Court About-Faces

Unions and many labor lawyers are talking to themselves about implications of two Supreme Court decisions. It had seemed clear that the state courts were closed to labor relations cases. Now, the high court says "No." The unions took two cases involving damages awarded by state courts to the Supreme Court, arguing that state courts had no right to entertain such suits. Exclusive jurisdiction, they contended, was vested in the National Labor Relations Board. The Supreme Court now says state courts can take such cases and that their awards are final. Alabama jurors had awarded a worker $10,000 because he was kept from his job by pickets. Already, 52 suits have been filed against unions operating in Alabama. The other high court case involved a Californian awarded damages because he had been expelled from a union and thus deprived of work.

NLRB Reverses Policy

The NLRB has reversed an 11-year-old policy and ruled that a union not in compliance with Taft-Hartley can be included in representation elections. The reversal results from a Supreme Court decision that the law did not bar a noncomplying union from the ballot when an employer requested that the union be included in the election.

Lead Prices Cut Again

For the third time this year, lead producers have cut their price; the latest move was from 11.5 cents to 11 cents per pound. The action on June 3 brought the price 2 cents below the quotation at the beginning of the year. Reason: Lack of business. Now the question is: Will zinc follow suit? It has

withstood four price slashes in lead without budging, but chances are 50-50 that it may drop soon.

Trouble with Inventories

Inventories tie up nearly 30 per cent of the working capital of the average U. S. business, says the National Industrial Conference Board. Its survey of 100 firms shows: 1. Management in general is dissatisfied with its control over inventories. 2. There's a lack of guiding principles upon which executives can base their day-to-day inventory decisions. 3. Only a few companies view inventories in a positive light and seek increased profits from inventory management rather than the mere avoidance of losses.

Metalworking and the Cost Crisis

Metalworking's concern about rising costs shows up in the unexpectedly high response to this publication's Cost Crisis Competition. The editors are searching for companies that have made important cost savings through more efficient use of capital equipment. The ten best will win awards, provided they comply with questions and conditions set forth in STEEL's award kits. As of June 4, 5170 kits had been requested. Deadline for entries in the competition is June 15, midnight next Sunday.

Missile, Aircraft, and Space Plans

Here's what Congress wants the Defense Department to obligate for major defense programs in fiscal 1959 (for the House's increases over the original January budget, see Page 62): For the B-70 chemical bomber—$96 million; for the Atlas, Titan, and Minuteman—$950 million; for the Thor and Jupiter (Chrysler is fully tooled to produce the Jupiter)—$440 million; for the B-58—$758 million; for the Polaris and its subs—$1.3 billion; for antisubmarine warfare, including destroyers, subs, missiles, and aircraft—$1.5 billion; for antimissile missiles—$157 million; for reconnaissance satellites—$152 million; for putting man into space—$138 million; for lunar probes—$72 million; for the atomic airplane—$40 million.

Joke of the Week?

Says George Feldman, chief counsel, House Astronautics & Space Exploration Committee: "It seems reasonable that some asteroids may be nickel steel. Now suppose that a small one can be brought to the earth . . . Its weight (if 100 ft in radius) is 2 billion lb. It would have a market value of $1 billion. The capture of four of these asteroids a year would satisfy the entire world's demand for steel. It may become necessary to engage in such 'mining.'"

Straws in the Wind

American Motors Corp. will add significantly to its $7.3 million first-half profit during the last half of its fiscal year ending Sept. 30 . . . Russians are firing four intercontinental ballistic missiles per month . . . Barium Steel Corp. has completed purchase of 900 acres in Burlington and Florence Townships, New Jersey, for its proposed 800,000-ton steel plant; site preparation will start "in the near future" when financial arrangements are completed.

PROOF: B&W Refractories withstand CO and H_2 prepared atmospheres

ATMOSPHERE	APPLICATION	CONSTRUCTION	RESULTS
60% CO	Pusher Type Malleabilizing Furnace	Walls lined with B&W K-23 Insulating Firebrick backed with B&W K-20 IFB. Roof construction—9′-0″ wide sprung arch of B&W K-23 IFB.	No major rebuilding in 21 years.
40% CO	Radiant Tube Annealing Furnaces Malleable Iron Company	Bases lined with 7″ Kaocrete-A, backed with 6″ Kaolite-20. Base size—21′-9¾″ x 9′-9¼″. Temperature 1550 to 1600 F.	In service 11 years. Reducing atmosphere has no effect on the base. All portable annealing furnace bases in plant lined with B&W castables. *Maintenance costs reduced greatly.*
		Bell type covers lined with 9″ B&W K-23 IFB standard shapes in the arch, side and end walls. 13½″ K-23, with Kaowool, is used around the radiant tube openings. Cover is 22′-6″ x 10′-5½″ outside x 8′-4½″ to top of arch.	After approximately 6 years of service, lining showed no disintegration from reducing atmosphere.
65% CO	Radiant Tube Annealing Furnace	Base lined with 5½″ Kaocrete-A and 3½″ Kaolite-20 on top of 5½″ of block insulation. Base size 21′-9″ x 9′-9″. Temperature 1700 F.	Formerly heavy firebrick linings required rebuilding yearly. B&W castable construction has given more than 9 years' service. Customer standardized on B&W castables.
100% N_2 and 100% H_2	Elevator Type Annealing Furnaces Large Steel Co.	Walls lined with 9″ B&W K-23 IFB plus 3″ K-20 IFB. Furnace size 6′-0″ x 16′-0″ x 4′-0″. Temperatures in excess of 2100 F.	B&W refractories show no sign of deterioration in six furnaces of this type in 3 years' operation. Barring mechanical damage, refractories should give long additional service.
100% H_2	Rectangular Hood Type Annealing Furnaces	60 Furnaces, 24 have wall construction consisting of 18″ B&W K-26 IFB plus 2½″ K-1620 IFB. 36 units use wall of 9″ B&W K-26 IFB plus 5″ K-1620 IFB. Furnace size—12′-0″ x 8′-6″. Temperature 2150 F.	Of the 60 covers in service only 2 were rebuilt after 2 years' service. Plant masonry superintendent reports no shrinkage; estimates 15 years' additional life if not for mechanical abuse.

Consult your B&W Refractories Representative for helpful information on your prepared atmosphere problem.

B&W REFRACTORIES PRODUCTS: B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick • B&W Refractory Castables, Plastics and Mortars • B&W Silicon Carbide • B&W Ramming Mixes • B&W Kaowool

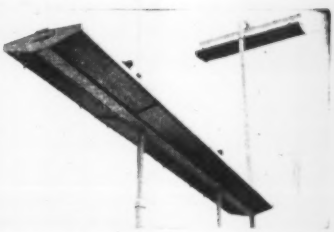
BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

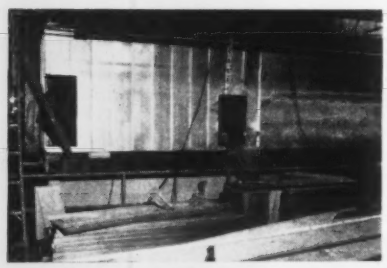
NEW ALUMINUM-COATED STEEL GIVES PRODUCTS LONGER LIFE, CUTS COSTS

Armco ALUMINIZED STEEL Type 2 provides low-cost corrosion resistance, eliminates need for paint.

New Armco ALUMINIZED STEEL Type 2 combines the strength of steel with the durable protection of a tightly adherent hot-dip aluminum coating. This unusual combination of metals offers economical corrosion resistance, high heat reflectivity and the opportunity to cut fabrication costs.



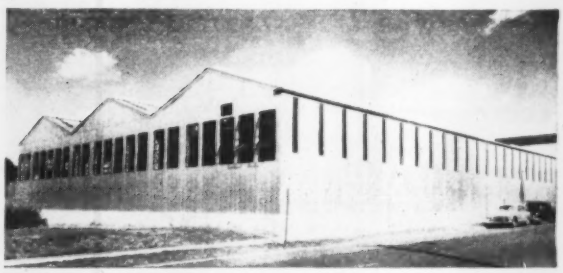
OUTDOOR LIGHTING FIXTURES, SIGNS



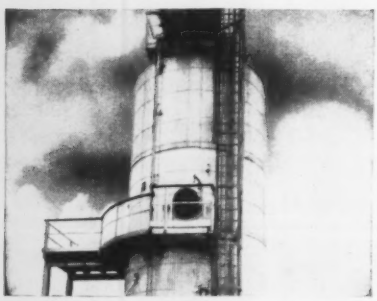
OVENS, BOILER SHROUDS

15-year tests in industrial atmosphere show that the life of the coating on ALUMINIZED STEEL Type 2 is at least 3 times that of an unpainted zinc coating on commercial galvanized steel sheets. The tests were conducted before this 2-in-1 Armco Steel was put into commercial production.

Reduces fabrication costs, too. The attractive coating on ALUMINIZED STEEL eliminates the need for paint or other surface protection. You can make substantial cost reductions by cutting entire operations from production schedules.



BUILDING PANELS, ROLLING DOORS, AWNINGS



INSULATING PROTECTIVE COVERS

Give your outdoor products extra corrosion resistance at low cost. Specify Armco ALUMINIZED STEEL Type 2. This special Armco Steel is produced in sheets and coils from 13 to 28 gage and in the form of corrugated sheets and welded tubing.

Let us send you complete information. Just fill in and mail the coupon.

ARMCO
STEEL CORPORATION
2307 Curtis Street, Middletown, Ohio

Sheffield Division
Armco Drainage & Metal Products, Inc.
The Armco International Corporation

ARMCO STEEL CORPORATION
2307 Curtis Street, Middletown, Ohio
Send me complete information on
☐ Armco ALUMINIZED STEEL Type 2
☐ Armco ALUMINIZED STEEL Type 2 Tubing
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Depreciation Reform

Let's Not Compromise

In the seven weeks since this magazine sounded its call for bold action on depreciation reform, the editors have received scores of letters from metalworking managers. They have unanimously echoed the need for updating our obsolete depreciation laws and have offered many suggestions for permanent revision.

Two recommendations stand out:

- **Abandon the rigid concept of useful lives for capital equipment and permit industry to amortize (for tax purposes) machinery and equipment on the basis of their economic lives.**
- **Recognize inflation.**

A few metalworking executives are pushing one recommendation at the expense of the other.

We are convinced that we must drive for reform on both aspects of the problem. That will make the task of selling Congress on the necessity for depreciation reform and the writing of new legislation more difficult. It makes the problem more complex.

We believe the added effort is warranted. We believe it is imperative if this country is to maintain its industrial pre-eminence.

Not to recognize inflation in depreciation is tantamount to confiscation. A facility built in 1933 at a cost of $10 million may cost $45 million to replace today. If our depreciation laws permit the recovery of only $10 million, we are encouraging the use of obsolete equipment. We are fostering inefficiency.

To arbitrarily set a useful life for equipment, without regard for our galloping technological developments, is placing too tight a rein on progress. In effect, it is asking industry to launch a missile from a wheelbarrow.

Depreciation is as much a cost of doing business as wages, salaries, and other obvious operating expenses. Recognition of that fact is so fundamental that no effort is too great to achieve it.

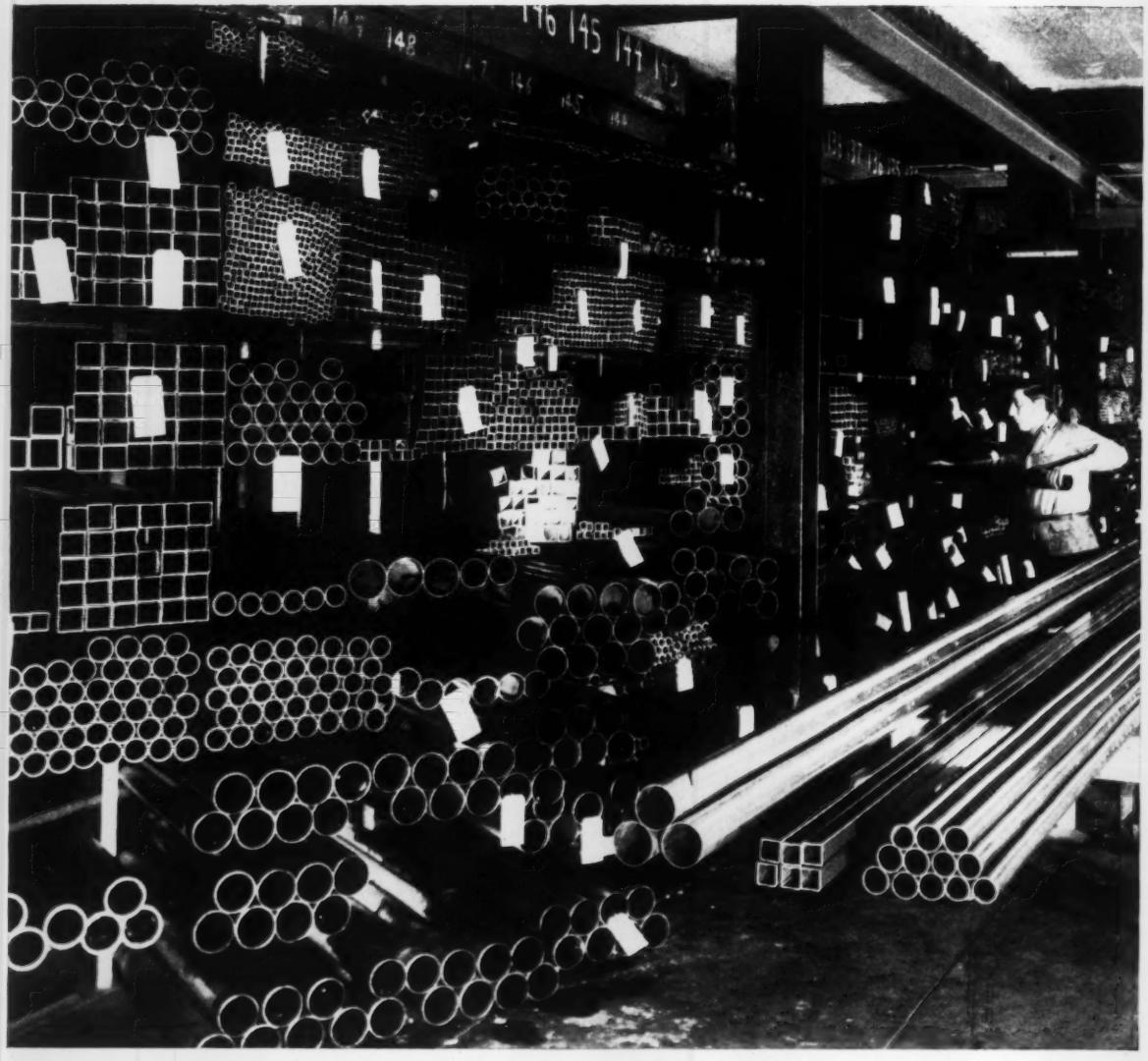
Again, we know that drafting a law to cover useful lives and inflation will be a big chore. But we don't think a six-syllable problem can be answered with a one-syllable reply.

Depreciation reform is worth working for. It is worth sweating out the right answer.

Let's not settle for anything less than a complete solution.

Walter J. Campbell

EDITOR



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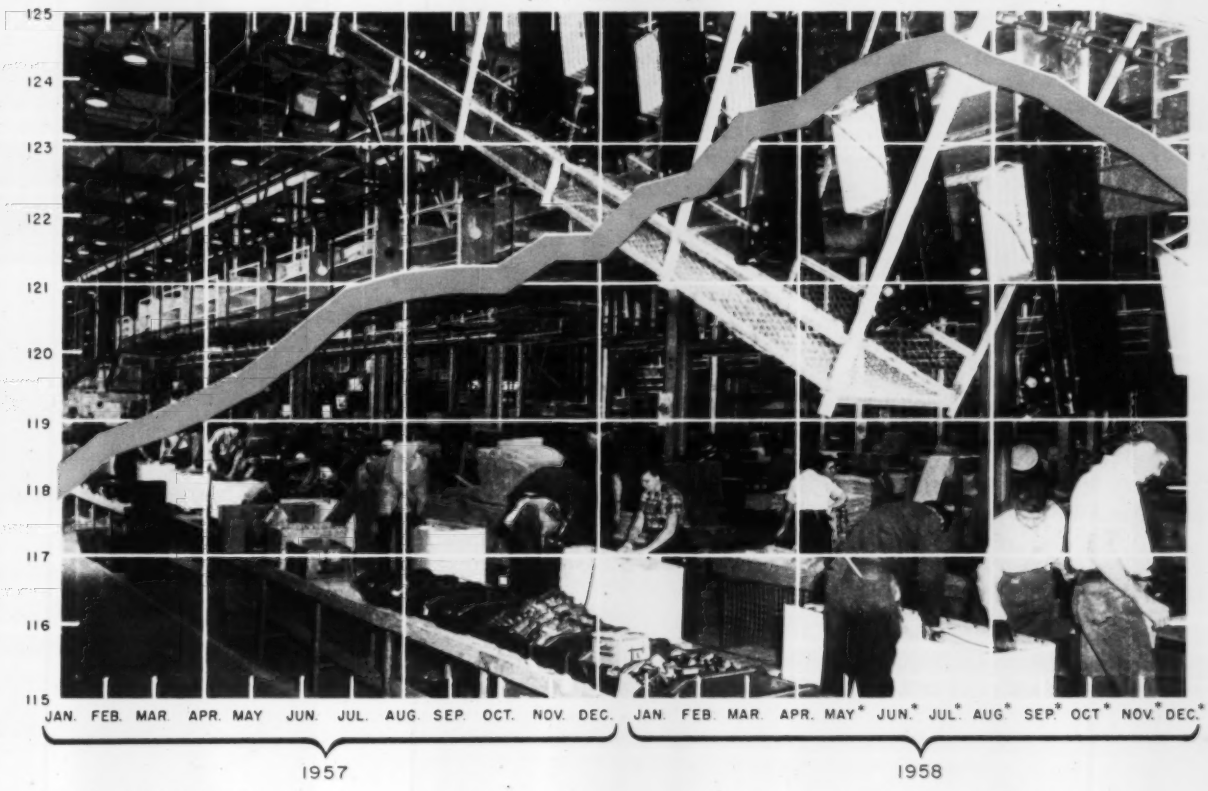
Consumer Price Index To Rise Through Midyear—Then Fall

(1947-1949 = 100)



Source: Bureau of Labor Statistics.
*Estimated by STEEL.
Photo: Westinghouse Electric Corp.

Forecast for Hard Goods

Look for prices to stabilize over the next six months. There's little chance of many hikes. The wave of price cuts in this field is believed on the decline

PRICES of consumer durable goods will stay near present levels through 1958. Few increases are expected; any fluctuations will probably be downward.

Most manufacturers believe that price reductions are about over. Qualification: If business suddenly worsens, makers might trim more to maintain their markets.

The Problem—Mounting costs (labor, materials, freight, taxes) put pressure on makers to elevate quotations. But they are restrained by slow business, rugged competition, overcapacity, and anticipated customer resistance.

What's Ahead—An upsurge in business strong enough to overcome the price weakness isn't expected—neither is a substantial decline.

The outlook in nine consumer goods categories:

Automobiles—Detroit hasn't made any firm decision on 1959 model prices and won't until: 1. Labor contracts are settled. 2. Steel prices are set after steelworkers get July 1 wage hikes.

A price cut appears out of the question. Detroit observers are pretty well convinced an advance is in the air. Best guess is that suggested retail prices will average $25 to $40 more than those on this year's models. Washington observers look for buyers to pay 4 to 5 per cent more for 1959 cars if excise taxes aren't cut.

Air Conditioning Units—Prices of room air conditioners have declined an average of 10 to 25 per cent over the last few months. Major

reasons: 1. Excess industry capacity. 2. A desire to stimulate growth. 3. Increased competition. 4. Large stocks of last year's models.

The carryovers affect prices most. Example: Units that sold for $199 in 1957 are as low as $139 this year.

The pricing outlook: A hot summer will mean stable prices. If the weather remains cool, expect more price cutting. Some weakness may be felt in late fall (after the hoped-for summer upsurge).

Prices of central air conditioners have held steady for six months. The supply situation is more in balance here. Most makers have been fairly cautious in their 1958 production schedules, so there is little excess inventory.

Look for prices to remain at present levels with the possibility of an increase of about 5 per cent in the summer if materials and labor costs go up.

Radios, TV Sets—Manufacturers' prices have held steady, but there has been widespread shading by the dealers. Competition and demand have set prices. One company estimates some prices are off as much as 40 per cent from those of a year ago.

Makers would like to hike quotations. They're being hit by higher material and labor costs (one manufacturer just granted a wage package totaling 15 cents an hour) which cut further into low profit margins. But they doubt if the volume of sales would support a markup now: Black and white TV sales are running 10 to 20 per cent under 1957's; color sets are up around 20 per cent. Radio sales run from "about the same" to "off 15 per cent."

Outlook: Nationally advertised prices should hold at present levels the rest of the year. Distributors will continue to make their own deals, but less price shading is expected. Demand should climb after midyear (the second half is traditionally the best for the industry) but probably not enough to force a price boost.

Refrigerators — Stepped-up competition and a sales slump have prompted many makers to drop suggested list prices. Price cuts on the dealer level have been widespread, due partly to lower prices at discount houses.

One company says apparent price cuts at the factory level are the result of designing down (cutting off frills). Result: Some spring models carried price tags $50 to $100 under last year's.

With labor and material costs threatening to gain this summer, makers say they'll pass on at least some of the increases they've absorbed. Expect a price jump of 5 to 10 per cent on fall models if "business picks up to anything resembling an active market."

Washing Machines—Fluctuations have been minor at the wholesale level. One company says it has increased charges on a few models, decreased others. Most manufacturers' cuts came from the introduction of "special" models with less frills.

Retailers have done most of the price shading. They're offering concessions and have pushed lower-priced merchandise in an effort to buoy sales.

Industry sales are off 25 to 30 per cent from those of a year ago.

Outlook: Stability. Reasons: Higher costs should hold back any dips; competition and the business climate pretty well rule out a boost.

Kitchen Ranges—Prices last rose in the fall and early winter of 1957. This year the trend has been to cut quotations. Price shading has been severe on the dealer level, sporadic among manufacturers. One firm says it initiated across-the-board cuts in early May.

Sales are down for the industry (probably around 20 per cent) although several firms report small gains. Profits are lower and are expected to sink more.

A price increase is doubtful. Consensus: Competition and customer resistance will hold prices at present levels till yearend.

Plumbing Goods — Prices have dropped about 5 per cent in six months. Several firms report their goods are selling 15 to 25 per cent under 1956 levels.

Competition is intense. Large companies are doing some price adjusting. Some small makers who buy components and fabricate the end product are selling at cut rates. The practice has led to such things as special quantity discounts and freight absorption.

Companies report unit sales are 5 to 46 per cent below last year's. Dollar volume is probably off more. Reason: Builders are buying cheaper fixtures or paying less for those of higher quality.

Business improved a little for most makers in April and May. The industry expects the trend to continue if the weather allows a construction upswing. Manufacturers hope to hold prices at present levels. One company says they could go up 5 per cent in late summer, but the majority believe there's too much overproduction for that. Probable: Price stability through the summer; some chance of a further decrease in the fall.

Home Furnaces—"Price shading is becoming the order of the day," says one company. Reports another: "The list price is just the starting point." Prices have fallen an average of 3 to 10 per cent the last six months and are down as much as 20 per cent on some large sales (such as housing projects).

Although the average company's sales fell about 15 per cent this year, some makers say they'll have to raise prices (around 5 per cent) if steel prices go up.

But intense competition, more capacity than demand, and high manufacturers' inventories, make a price hike unlikely. Look for prices to hold near present levels.

Water Heaters, Boilers — List prices haven't changed noticeably since last year. But price cutting by dealers and shading by makers have been widespread.

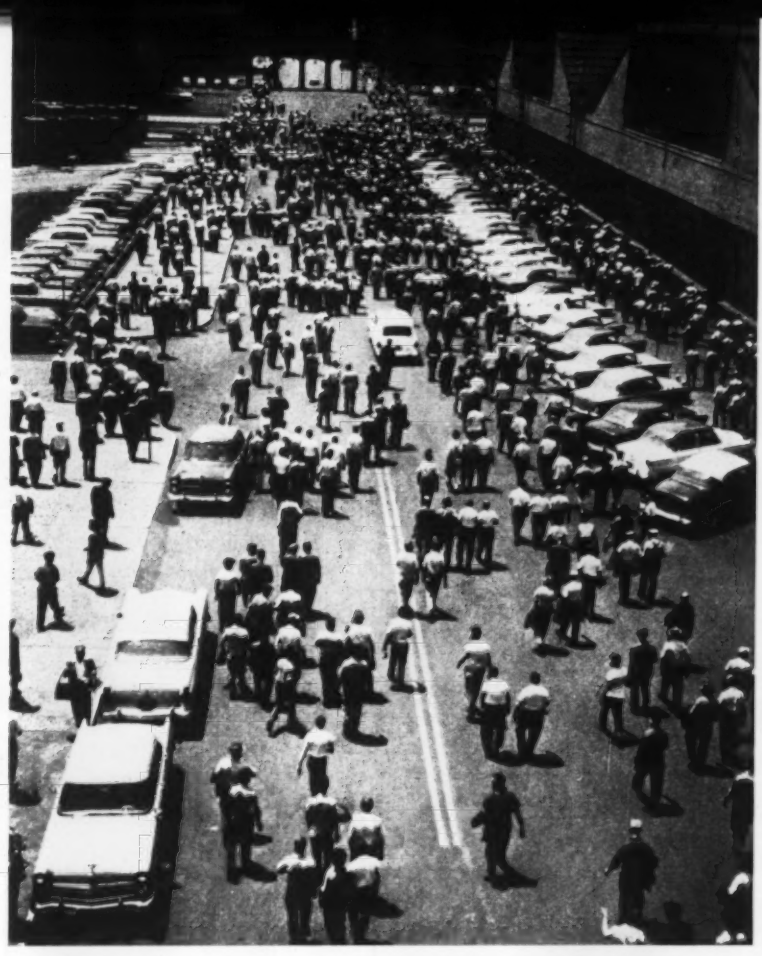
Makers report sales are off 5 to 25 per cent. While demand has slackened, production has continued near normal levels, making competition intense.

A gain in steel prices would exert powerful pressures for a price boost. So would a wage advance this year.

But an increase is probably ruled out by anticipated customer resistance and competition.

Look for relative stability the rest of the year. Consensus: Manufacturers can't sell at lower prices and make a profit; costs must be absorbed because of market conditions.

• *An extra copy of this article, the last in a five-part series on metalworking's pricing prospects, is available until the supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio. On May 12, the editors dealt with steel prices; on May 19 with components; on May 26 with production equipment; on June 2 with construction.*



Workers are rallying to the UAW as . . .

Automakers Face Stalemate

AS AUTODOM began its third working day without contracts, more and more evidence indicated that union members are rallying to Mr. Reuther's cause. Detroit labor circles are wondering if the auto companies' stand-fast strategy has backfired.

It appears that General Motors Corp., Ford Motor Co., and Chrysler Corp. were counting on the loss of contracts with automatic check-offs and steward privileges to weaken links between workers and union leaders, making it tough for the UAW to collect dues.

Another hope seemed to be that heavy unemployment would cause workers to blame Mr. Reuther if he failed to settle for the automakers' two-year extension offer. If such were their ideas, the companies have underestimated Mr. Reuther's power.

Rally 'Round — As far as dues collections go, the union is urging stewards and committeemen to check off the men outside the gates and to issue "paid up" buttons. The men seem eager to comply.

Even if collections drop (and they are certain to fall some), the UAW has not-so-subtly indicated a contract will be signed sooner or later and men who haven't paid might have trouble getting reinstated. If the financial pinch becomes tighter, the UAW can borrow.

Get Tough—What can the companies do? Nobody's sure. It's tough enough to work without a contract after almost 20 years. The Big Three can tighten shop rules and restrict activities of stewards and committeemen, but they don't dare get too tough with the men. Quality might be affected, or the firms might get the full impact of publicity pointing out how "big business is exploiting poor defenseless workers."

Watch and Wait—Time is on the union side, and Mr. Reuther knows it. There's a stronger feeling of unity about the union than at any time since negotiations opened. Even if model changeovers are postponed, as some sources have suggested, every day brings the union closer to the point where a strike threat will have real power.

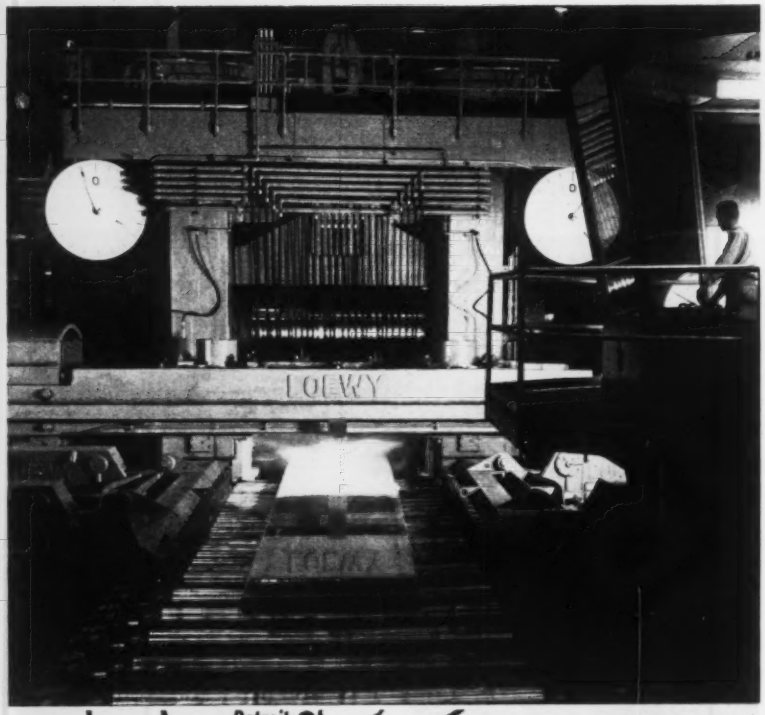
And every day increases Mr. Reuther's chances for finding a way to crack the united front the car companies have put up against him. This alliance is none too solid. It's known that Chrysler protested the contract extension proposal because it desperately wanted to negotiate better work standards this year. Chrysler can increase standards, but it could be risky if the Big Three stand together all the way.

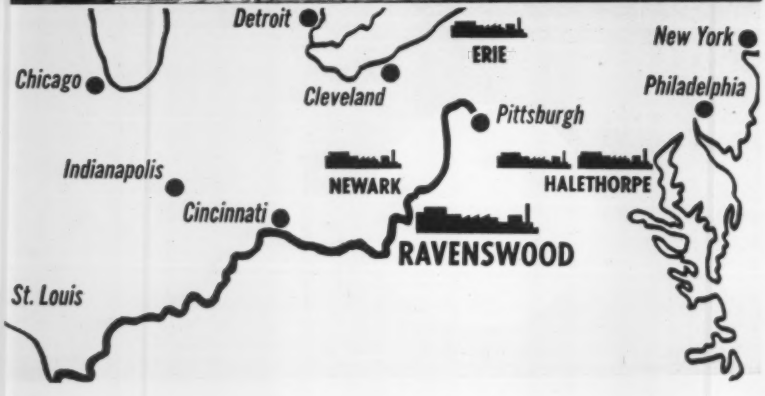
Quick Switch—The stalemate is quite a change from a few short weeks ago when it looked like the UAW would have to accept two-year extension offers in the face of widespread unemployment, high car inventories, and low sales. The UAW cut its package cost from 72 cents to 48 cents (company estimates) and reduced its demands to 11 basic issues (by union count).

At this point, labor viewers felt it was the companies' turn to offer to incorporate some of these demands into its extension proposal, but the automakers didn't budge. Neither did Mr. Reuther, although he now implies only three of these demands—more SUB, more pensions, some transfer rights—still are musts.

The next move appears to be up to the auto companies.

One Contract Extended—As the Big Three stand pat, American Motors Corp. has agreed to an indefinite extension of its present contract which expires June 15. Edward Cushman, AMC vice president, says workers will get no cost of living or annual improvement factory pay hikes during the extension period. Such increases will be retroactive after a contract is signed.





Kaiser Begins Hot Rolling

ALUMINUM users have a new source of supply for sheets, plates, and foil. Kaiser Aluminum & Chemical Corp. has begun "hot line" production at its $200-million plant near Ravenswood, W. Va.

From its site on the Ohio River, Kaiser can ship mill products to New York, Chicago, or Detroit in two days—to Cleveland or Cincinnati in a day. It's estimated that 70 per cent of its market is within 500 miles of the plant.

Strategic Site—Kaiser chose Ravenswood for an integrated mill because of nearby markets, transportation, power, and labor. Although it has reduced operations at some plants because of slack demand, it doesn't expect Ravenswood to replace any other facilities. A rolling mill at Trentwood, Wash., and reduction plants at Mead and Tacoma, Wash., will continue to supply western markets. (Tacoma is temporarily shut down.)

Here's how Kaiser benefits from a plant at Ravenswood: 1. It corrected the imbalance of having all of its rolling mill capacity in the West (where 17 per cent of the aluminum is consumed) and no capacity in the East (where 83 per cent is consumed). 2. It moved into contention for the big eastern markets. 3. It reduced its freight costs on shipments to the East. 4. It established a direct route for transportation of raw materials.

Cuts Costs—Kaiser mines bauxite in Jamaica and ships it to Baton Rouge, La., where it's refined to aluminum oxide (alumina). Alumina is transported to reduction facilities, which convert it to primary aluminum. By establishing a reduction plant at Ravenswood, Kaiser set up a direct line for the flow of materials from mine to market. The previous route took bauxite from Jamaica to Baton Rouge (for refining) to Mead, Wash. (for reduction) to Trentwood, Wash. (for rolling), and finally to midwestern and eastern markets.

Ravenswood has no immediate plans to use the river for barge transportation. Alumina comes in by rail, and mill products go out by rail or truck.

Abundant Power — When completed, Ravenswood will require more electric power than a city of 1 million. Unlike other aluminum plants, which traditionally use hydropower, it will rely on electricity generated by coal. A contract with Ohio Power Co. calls for delivery of up to 450,000 kw for 40 years.

Despite recent improvements in coal mining and steam-electric generation, Ravenswood's electricity will cost about twice as much as that generated by hydropower. Freight savings resulting from proximity to markets will probably be lost in higher power rates.

Capacity Operations — Although recession has idled much of the aluminum industry's productive capacity, Ravenswood operates 24 hours a day, seven days a week. Employment, currently 1800, is increasing about 100 a month. It's expected to reach 4000 by 1960, when all of the auxiliary facilities are in.

Two of the reduction plant's four

potlines are in operation. Each produces about 100 tons of molten metal a day. When the other lines are set up, annual capacity will be 145,000 tons.

The fabricating plant is shipping 2500 to 3000 tons of sheet and foil products a month. "If business conditions warrant it, we can ship 9000 tons a month by the end of the year," says Lloyd Amos, works manager. "When additional cold-rolling equipment has been installed, we'll have an annual capacity of 170,000 tons."

See Gear Upswing

Makers report gains in inquiries from varied users. They predict a fall pickup in sales

MORE ACTIVE inquiries are giving gearmakers hope for a fairly substantial upturn in orders by fall.

Members attending the 42nd annual meeting of the American Gear Manufacturers Association at the Homestead, Hot Springs, Va., report requests for bids have increased in the last eight weeks. The inquiries come from a variety of industries, including shipbuilding, farm machinery, missiles, aircraft, automotive, and general machinery.

Volume Down—Currently, most gearmakers are feeling the recession. Production and shipments reflect apathy in the economy. Companies serving the automotive industry are among those hardest hit. They anticipate a slow summer.

A few firms report no recession. One says its volume in the first half of this year will exceed its sales in all of 1957.

New Officers—E. F. Borisch, Milwaukee Gear Co., is the new president of AGMA for 1958-59. J. L. Buehler, Indiana Gear Works Inc. is vice president-gear products division, and Folke Richardz, Westinghouse Electric Corp., becomes vice president of the technical division. J. F. Murray, Winsmith Inc., is the new treasurer. John C. Sears, formerly executive secretary, becomes executive director.

The Edward P. Connell Award was presented to Darle W. Dudley, General Electric Co., Lynn, Mass.

STEEL Goes to Europe

Steel Co. of Wales.

No. 5 blast furnace at the Steel Co. of Wales, Port Talbot, Glamorganshire

British Production High

FEW PEOPLE in England are expressing "anxiety" over the economic situation in the U. S.

The reason: That country's steel production is currently at the rate of 23.5 million tons a year. Capacity is 26.3 million tons.

Steel consumption is also holding up well. The auto industry is taking 46 per cent more steel this year than last. Consumer stocks are being reduced—a healthy situation since most consumers have maintained heavy inventories since 1946.

Steel exports are 19 per cent under last year's figures.

Continuing Growth—Steel capacity is still being expanded. Ingot capacity will hit 27.4 million tons by 1960, 32.5 million by 1962, and about 37 million by 1970.

Steel Co. of Wales (with plants in South Wales largely built since the war) will complete another round of expansion by next year. Robert Evans, assistant works manager, told STEEL that capacity will be 3.4 million tons (now 2.5 million tons).

The program includes a 31-ft hearth blast furnace (capacity: 1880 tons daily), 50 new coke ovens, and three 56-ton basic bessemer converters (to be bottom blown, using a steam-oxygen mixture). Capacity of the 80 in., hot strip mill will be increased from 53,760 to 67,200 tons weekly by replacing the present slabbing mill with a faster universal mill.

This is another in a series of on-the-spot reports on European metalworking by STEEL's editor-in-chief, Irwin H. Such. He is now in Russia to gather material for special articles which will appear in STEEL.

Screw Sales Slip 30%

Shipments fall, producers' stocks rise, as leading users of socket type trim their buying. Growing requirements in metalworking industries cushion drop in demand

"OUR WAREHOUSES are filled with socket screws and we are carrying a larger ratio of distributor inventories." That's the report of several manufacturers in an industry whose sales are down about 30 per cent from the 1956-57 peak of about $25 million.

About 15 major socket screwmakers have fairly complete product lines, while many smaller firms make several sizes. They find their best customers among builders of production equipment, notably machine tools. Other leading users are automakers, farm equipment and appliance manufacturers.

Decline in shipments of cutting and forming machine tools (first quarter, 1958, totals of slightly under $160 million contrast with $318.9 million in the similar 1957 period), cut that industry's use of socket screws. Most other industrial users are lowering demand too, but in a less drastic manner.

Fast 15-Year Growth—Producers can point to some areas of growing demand. Applications in metalworking industries have increased rapidly for 15 years. Trends toward miniaturization stimulate demand for socket-type screws. Some socket cap screws nearly as small as a pinhead do precision work in electronic and instrument industries.

Producers report: "The tendency to reduce size and weight in many products with maintenance of adequate strength means logical specification of socket screws. The result is increased applications." They add: "Because of elimination of protrusions, jigs and fixtures can be designed more efficiently with socket head cap screws. With heads of cap screws recessed below the die face, clearance between punch and die is at an absolute minimum."

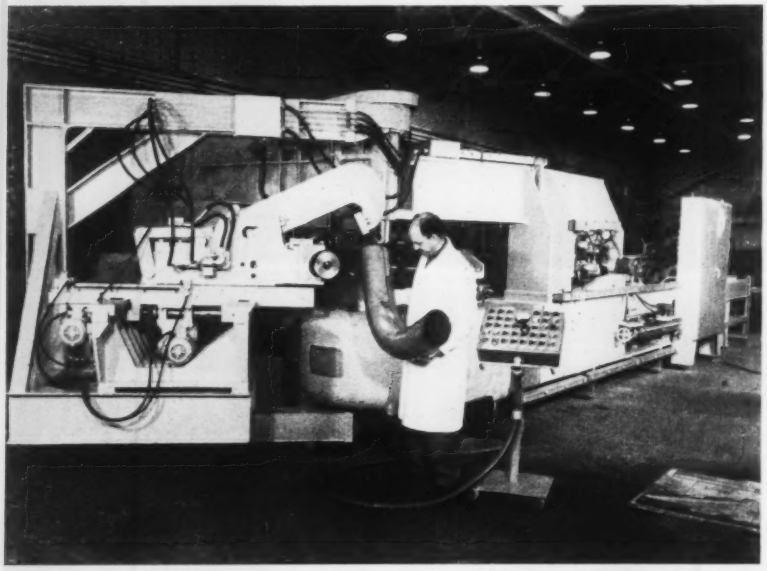
Marketed by Distributors—Producers sell 90 per cent of their output through industrial supply firms. They say that insures full stocks, quick service, and confidence in the backing of the manufacturer. While most distributors maintain a full line for convenient ordering, their buying is cautious now, and they are holding inventories as low as possible. Manufacturers' stocks of finished goods are heavy.

More than 90 per cent of socket screws are stock listed; the remainder are "specials." Producers stress savings by mass production and automation in the standard sizes, compared with extra handling necessary for special items. They say potential users designing socket screws into their equipment will find a size range in manufacturing catalogs for almost every possible application. Many sizes of stainless steel socket screws, formerly considered special products, are now in standard lists. Several manufacturers have 200 or more sizes of varied stainless grades.

Few Cut Prices—Despite increasing competition, socket screw prices are generally firm. Latest price advance in August and September, 1957, brought changes in most types. The increase resulted from higher steel and labor costs. While a few marginal producers are reportedly shading prices, the industry largely maintains a steady pricing structure.

In efforts to build sales, socket screw manufacturers emphasize quality of material and precision in production. Producers say socket screws are specified in areas of hard usage because of tight and precise fit. One application is the machine tool industry, where hard surfaces and strong alloy steel offset vibration and motion and withstand constant wrenching and rewrenching.

Assembly Jobs Speeded—For faster assembly of socket screw-fitted equipment and products, several driving systems can be adapted to automated production lines. Socket screws in sizes $\frac{3}{8}$ in. and under are fed from hoppers, oriented and positioned for driving in a driver feed tube. These feeding-orientation devices select, orient, insert, and drive standard socket head set screws into tapped holes at predetermined torque.



THIS TUBE BENDING MACHINE makes possible bending 8 in. OD x 0.020 in. stainless steel tubing. It was built by Pines Engineering Co. Inc., Aurora, Ill., and features a direct-acting hydraulic pressure die, a direct-acting C-frame clamping die, and an independent retractable swinging arm which permits removal of the formed tube from the dies at the end of the bending stroke. Rigid frame construction and new concepts of pressure control help eliminate deflection of tooling and assure wrinkle-free bends without rupturing thin-wall material

Cabinet Sales Slide

STEELMAKERS are losing a good market to wood, warn some kitchen cabinet manufacturers whose sales of steel units are declining. "Rising costs of steel make wood more attractive economically. Steel is an excellent cabinet material, but our products, almost 100 per cent steel, have followed the price trend of the metal. We have been forced to increase prices 6 to 10 per cent each year for several years," says one maker.

Another cabinet producer complains: "For several years, the range of competitive selling prices between wood and steel cabinets has widened to the disadvantage of steel. Speculative home builders, formerly substantial customers for steel cabinets, are switching to wood."

Reports a midwestern manufacturer: "Cabinet producers would have used more than three times as much steel last year if half of all kitchen cabinets sold had been steel. This would have happened—if steel's cost had been competitive with wood."

Sales Volume Falls—Producers hope that gains in demand from apartment builders and a continual trend to home modernization will counterbalance lagging demand from new home builders this year. They concede it will be hard to nudge dollar volume over last year's disappointing $150 million. Volume in 1957 was $38 million under 1956's and $59 million below record 1955. Sales of 2.5 million cabinets was a ten-year low.

Several cabinetmakers reported moderate sales increases in April, but the consensus is that sales are lagging 10 per cent or more behind 1957's. Crane Co., Chicago, reports a gain in demand from apartment house builders. Says another producer: "Steel cabinets for apartments and public housing are in firm demand. New apartments contribute to the sales volume, but the renovation of old apartments is a larger factor. Vacancies are up in recession-hit areas, causing owners to repair their buildings to attract new tenants."

Wood is a more serious competitor in private housing. A spokesman for wood cabinet producers estimates that 85 per cent of the units installed in new homes in 1957 were wood.

Several producers combine advantages of steel and wood by making a steel cabinet with wood doors. Youngstown Kitchens Div., American Radiator & Standard Sanitary Corp., Salem, Ohio, reports "good acceptance" of its wood-steel cabinet. Says another producer: "Wood combines well with steel. The new models help our sales volume, but they reduce our need for steel."

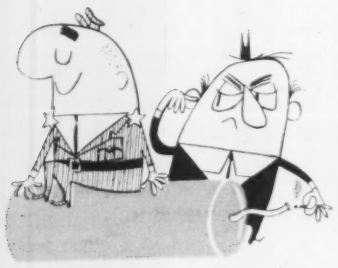
Prices, Profits Tumble—Cabinet producers are trimming their prices. Says one: "Cabinets are selling virtually at cost. Our profits fall with our selling price."

Declines in sales and profits cause some smaller producers to cut their participation in the industry. A New York manufacturer comments: "We switched to production of special cabinets for hospitals when profits dropped in our output of cabinets for homes."

Sales Stimulus—Sales managers plan to bolster order volume by taking advantage of trends to home improvement. Toledo Desk & Fixture Corp., Maumee, Ohio, says: "As kitchens add more modern equipment, homeowners want new cabinets for a thoroughly modern room. Pastel colors help speed the trend to modernization."

Sandusky Metal Products Inc., Sandusky, Ohio, reports it boosted sales by broadening its marketing area and aiming accelerated sales efforts at the replacement market.

"Our chances for sales gains in future depend largely on promotional efforts of steel producers to supplement our sales efforts," a leading cabinet producer sums up. "Several steelmakers are doing a fine promotion job, but we need more of the same."



House Bill Speeds Missile Programs

THE HOUSE Appropriations Committee has added $1 billion to President Eisenhower's January request for defense funds. That money will be used this way: $649 million for more Polaris-firing submarines and a speedup in the Regulus-firing sub program; $90 million for the development of the Minuteman, a solid-fueled ICBM; $48 million for equipping our B-52 bombers with the Hound Dog; $42 million for "modernization" of the Army; over $150 million for the emergency fund and Army and Marine personnel.

The committee also sliced the President's request by almost $1 billion by transferring funds within the services, cutting over $100 million out of the Navy's ship program and almost $350 million from the aircraft spare parts program. The armed forces will also be forced to get along without $24 million worth of executive-type aircraft.

Subtract the hard goods cuts from the hard goods additions and you see that metalworking gains a healthy $375 million. The budget for defense now looks like this: Direct obligations (new orders) of $42.6 billion in fiscal 1959 and actual spending of $40.3 billion.

Missile Production Rates Hinted

The committee reports these missiles for procurement in fiscal 1959:

Nike-Zeus—$130 million is set aside for this antimissile missile, although more than that will not be spent until Defense is certain it is the best system.

Hawk—This antiaircraft missile will be procured "in large quantities."

Nike-Hercules—The successor to the Ajax will be built "in about the same quantities as in 1958."

Redstone—The surface-to-surface missile will be produced "in limited quantities." (A solid-fueled version, the Pershing, is under development by Martin.)

Sergeant—To replace the Corporal, it will be produced "in support of the development program."

Lacrosse—Called "a more accurate" missile, it will be produced in "operational quantities."

Dart—This antitank missile will be "placed in production."

Polaris—Funds are available for nine Polaris-launching subs and for missiles to supply five of them.

Sidewinder, Talos, Tartar, and Terrier—These Navy missiles will be "procured." In addition, "production line procurement of a new long range antisubmarine warfare weapons system" is established.

Various Air Force missiles produced in fiscal 1958 continue in production, but no hints of quantities to be built are given by the committee.

Alaskan Statehood Still Doubtful

Although the House pulled the year's surprise by voting statehood for Alaska, don't expect the Senate to O.K. it. Crippling amendments are to be offered by several senators when the bill comes up for debate —including a move to tie Hawaiian statehood to it.

The House remains reluctant to accept Hawaii, and the more cynical Washington observers suspect House passage was based on the belief that the Senate would kill Alaskan statehood or tie Hawaii in, too. If Hawaii is returned to the House along with Alaska for a new statehood vote, there will probably be less than 150 representatives willing to say "yea."

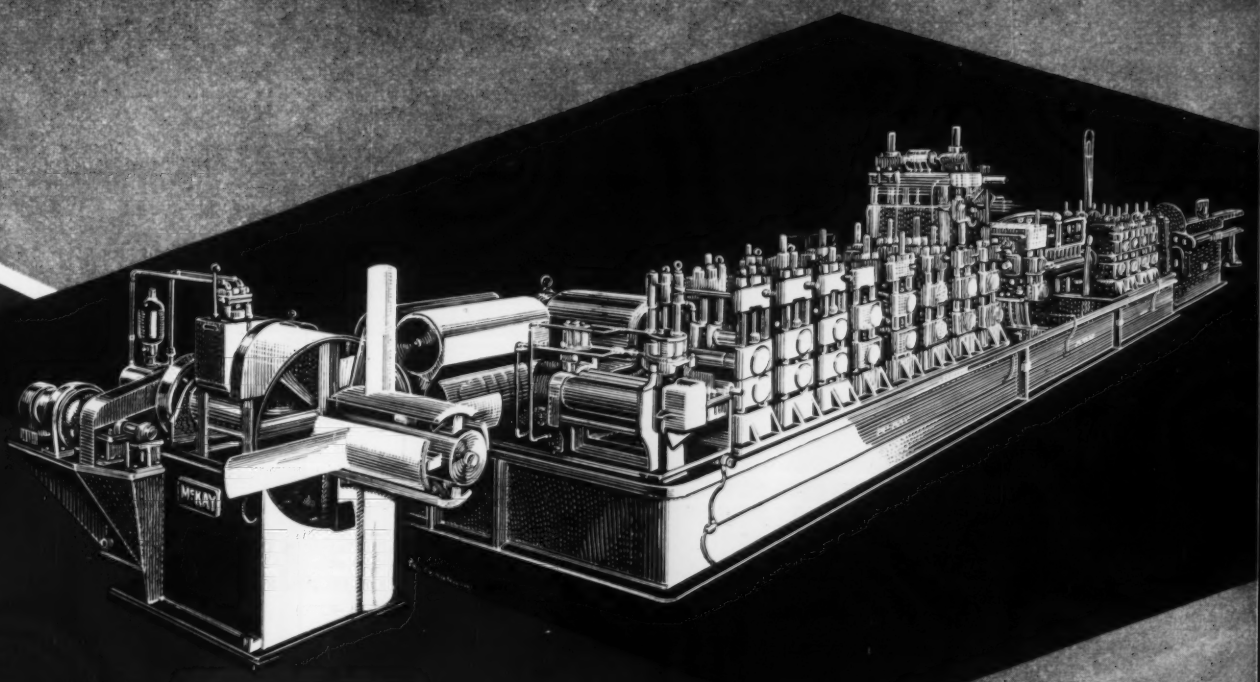
Who Cooled Off Depreciation Reform?

An example of Washington's ability to go from hot to cold on an issue was seen last month on proposed depreciation reforms. Three weeks ago, everyone in town was convinced some sort of depreciation reform would have to come out of the maneuvering to extend corporate and excise taxes by June 30. Today, even the staunchest supporters of reform are admitting little hope. It is reported, for example, that Sen. Homer Capehart (R., Ind.) failed to get the response from businessmen that he expected on his proposal for Bulletin F changes. (See Page 65.)

Likewise, Rep. Wilbur Mills (D., Ark.), head of the House Ways & Means Committee, now believes only limited reform for small businesses can come, and he is not too sure about that. The point seems to be this: With the recession fever dropping off on Capitol Hill, more congressmen woke up to the need for some solid election issues this fall and promptly decided that about the worst thing they could champion would be any sort of help to business. The pressure is on business to go it alone this year, in return for vague talk that something might happen next year when there is no election to worry about.

Civilian Space Agency Set

The National Aeronautics & Space Administration, President Eisenhower's proposal for a civilian space agency, has been O.K.'d by the House unanimously. Passage by the Senate is almost certain. The National Advisory Committee for Aeronautics, including its "functions, property, personnel, funds, and records," will form the nucleus of the new agency. In spirit, the bill centralizes our space program, but plenty of power will remain in the Defense Department and Atomic Energy Commission.



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Using different methods, Peloubet (left) and Barlow show . . .

How To Reform Depreciation

ONCE UPON A TIME an entrepreneur bought a ton of nails. With inflation, he sold them at 100 per cent profit. When he went to buy more, a market research study revealed that a more complex design was popular. What with the added expense and more inflation, his original capital and profits would buy only ½ ton. He sold them at 100 per cent profit. Yet further obsolescence and inflation enabled him to buy only ¼ ton the next time around. So it went until he had enough funds to buy only one fastener—a splendid device that was strong enough to support his weight when he hung himself from a wall.

The nail seller ignored inflation and didn't understand the impact of technological change. Those failures have brought double trouble elsewhere—in the U. S. tax depreciation system, for example.

The House of Representatives is letting a good chance slip by to tackle the twin problems afflicting depreciation. As things look now, the only depreciation legislation to come out of the lower house in this session will be a pale reference to the matter in a small business bill. The only hope for real reform in 1958 lies in a Senate amendment to a House tax measure. But the case appears lost because the Senate is scheduled to begin tax debates soon, must act by June 30 on excises, corporate rates.

Yet, it's none too soon to start beating the drums for relief in 1959. Wilbur Mills (D., Ark), House Ways & Means Committee chairman, says he's "hopeful" of action in the next Congress. His tax-writing group will have scores of remedies to study. Two stand out as having the heaviest industrial support (STEEL, Apr. 28, p. 55).

One—developed by Joel Barlow, a member of the Washington law firm of Covington & Burling and chairman of the U. S. Chamber of Commerce's Committee on Taxation—aims primarily at the technological problems of depreciation. The second—developed by Maurice E. Peloubet, a partner of Pogson, Peloubet & Co., New York accounting firm—aims at the inflationary side of depreciation.

Depreciation and Obsolescence

Tax depreciation matters started to get out of joint in 1934. The Roosevelt administration needed more money but didn't dare raise taxes. Out came an ingenious ruling, Treasury Decision 4422, which for the first time put the burden on industry to prove that the schedules of useful lives it was claiming for tax depreciation were actually in effect.

If a company couldn't prove its rates (and few could in those days of sketchy records), the government had a list handy which it had compiled in 1931. It was based largely on experience industry had in re-equipping during the 1920s. The list was revised in 1942 and came to be called Bulletin F. The average life allowed was (and still is) about 20 years. The effect has been to reduce depreciation allowances so that profits—and taxes on them—went up. What was intended as a tax-boosting expedient to last only a few years has become a permanent fixture. The 1942 Bulletin F is based on experience in the 1930s (when industry could not re-equip because it lacked money) and the early 1940s (when it could not replace because new facilities weren't generally available under wartime restrictions).

Look what has happened technologically since 1942! A new revision of Bulletin F has been completed but not finally approved. It's understood that the changes are not far-reaching and chiefly include additions to the list of equipment invented since the last revision.

Treasury rules make allowance for obsolescence, but the burden of proof requirement virtually nullifies any allowances. "Obsolescence cannot be proved," says Mr. Barlow. "It can only be predicted."

A company that proves it has re-equipped faster than Bulletin F specifies can usually win higher depreciation rates. But that's a matter of company-by-company ne-

gotiation. Firms with the best negotiators usually get the best deals. Small companies are at a particular disadvantage.

"The disparity in treatment of taxpayers is unbelievable," says Mr. Barlow. "It's not unusual for the Internal Revenue Service to take the position that two competitors in the same industry making the same products on the same type facilities must use different depreciation rates simply because of abnormal depreciation patterns established in the 1930s and 1940s."

What can be done? Abandon the rigid concept of useful lives, advises Mr. Barlow. No other modern industrial nation in the world uses it.

He advocates the "bracket" method. Instead of useful lives assigned to a myriad of assets, depreciable property would be classified into no more than 10 or 15 general categories as in the Canadian system. Brackets of maximum and minimum useful lives would be given, with taxpayers allowed to choose any useful life within the bracket without challenge by the Internal Revenue Service. Any taxpayer who wished to use a life longer or shorter than those within the bracket would have the burden of proving its reasonableness to IRS.

Based on industry and Treasury statistics and studies, the bracket for machine tools would be seven to ten years. Most durable equipment would be in the five-to-ten bracket; buildings and fixed installations would be in the 20-to-30 group.

While this approach aims largely at the rigid useful life concept, its advocates point out that it would help with inflation because more flexible and liberal brackets would allow more rapid writeoffs. The faster the amortization, the less chance for inflation.

Among the many backers of the bracket system are the U. S. Chamber of Commerce, the National Machine Tool Builders' Association, and the Metal Cutting Tool Institute.

Depreciation and Inflation

The total depreciable property in the U. S., as shown by tax returns accompanied by balance sheets as of Dec. 31, 1955, was about $295 billion on a historical cost basis but about $385 billion on a current cost basis. Depreciation on a historical cost basis, excluding any allowance above normal depreciation, would amount to about $11.8 billion. Depreciation on a current value basis would amount to about $3.6 billion more—$15.4 billion.

In 1955, we paid taxes and dividends on at least $3.6 billion in paper profits. The paper profit was probably even higher in 1956 and 1957. What can be done?

Mr. Peloubet advocates a method called reinvestment depreciation: When the property is retired, you can deduct the difference between its value in current dollars and its cost at the time it was acquired. That amount, added to what was already written off, will compensate for the decline in the value of the dollar. The deduction would be allowed only to the extent that an equivalent investment is made at the time of or within two years of retirement. The amount written off in the first year would be deducted from the depreciable basis of the new propetry.

Reinvestment depreciation would work under the present Bulletin F setup or under a bracket system. It does require close cost accounting and the use of an index—either a new one developed by the government or some existing indicator such as the Department of Commerce's construction index.

Here's how it would work out: Suppose that in 1958 a taxpayer dismantles a machine purchased in 1938 for $50,000 and fully depreciated since then. Assume that the cost index shows an increase in costs of 130 per cent from 1938 to 1958. The taxpayer may elect to deduct in 1958 the cost of the property purchased that year to the extent that its cost exceeds $50,000 but not more than $115,000 (230% x $50,000). The maximum deduction is $65,000, or the equivalent of the 130 per cent cost increase. The remaining $50,000 can be depreciated at normal rates.

As another example, suppose that in the previous case new investment is only $60,000 in 1958 but that additional investment amounting to $200,000 is made in 1959. The taxpayer would take reinvestment depreciation deductions of $10,000 in 1958 and $55,000 in 1959—the total of $65,000 in deductions for the two years, equaling the 130 per cent price index increase multiplied by the $50,000 original cost.

Mr. Peloubet estimates that reinvestment depreciation would reduce the government's tax take from companies electing to use it by $1 billion to $1.5 billion a year. But the impact would not be anything like that on the total tax revenue, even for the short run, because the method requires the spending of the allowance, which would bring added

● In the proprietor's case in the accompanying table, he apparently pays the statutory tax rate on his income but actually pays out more than 100 per cent of his income in taxes because of insufficient depreciation.

In the second column, a corporation doing the same business as the proprietor pays a nominal tax of 52 per cent and an actual tax of more than 70 per cent.

A 5 per cent decline in sales (shown in the third colmun) makes the corporation pay a nominal tax of 52 per cent and an actual tax of more than 108 per cent.

Far-fetched examples? No, says Maurice E. Peloubet. "They are not contrived but show the results of a business which makes a good income—10 per cent and 5 per cent on sales—and where depreciation is a substantial but not a disproportionate part of the costs."

What Depreciation Does To Your Income

ON FEDERAL INCOME TAX BASIS	Individual Proprietor (Married, no children)		Corporation		Corporation (Effect of decreased income)	
Sales		$3,000,000		$3,000,000		$2,850,000
Cost of goods sold:						
Inventory 1/1	$ 100,000		$ 100,000		$ 100,000	
Purchases	1,000,000		1,000,000		1,000,000	
Manufacturing expense	500,000		500,000		500,000	
	1,600,000		1,600,000		1,600,000	
Less inventory 12/31	125,000	1,475,000	125,000	1,475,000	125,000	1,475,000
		1,525,000		1,525,000		1,375,000
Direct labor		700,000		700,000		700,000
		825,000		825,000		675,000
Other expenses:						
Selling	30,000		30,000		30,000	
Administrative and office	240,000		240,000		240,000	
Delivery	60,000		60,000		60,000	
Depreciation	195,000	525,000	195,000	525,000	195,000	525,000
Net income before taxes		300,000		300,000		150,000
Federal taxes on income		223,640		156,000		78,000
Net income		$ 76,360		$ 144,000		$ 72,000
Tax rate		74.55%		52.00%		52.00%
Above income is overstated because depreciation amount is based on historical cost, not current dollars						
Income before taxes, as above		$ 300,000		$ 300,000		$ 150,000
Understatement of depreciation — estimated to be 40% or ($195,000 × 0.40)		78,000		78,000		78,000
True income before taxes		222,000		222,000		72,000
Federal taxes on income, as above		223,640		156,000		78,000
True net loss		$ 1,640				$ 6,000
True net income				$ 66,000		
True tax rate on true income		100.74%		70.27%		108.33%

taxable profits for firms with which the allowance is spent.

Reinvestment depreciation applies the principles of LIFO (last in, first out). The government has accepted it in inventory accounting and in the sale of private homes. If you sell your house, the "profit" resulting from inflation since you bought it is not taxable if you acquire another house within a specified time.

Advocates of the method include some steel and cement producers, the American Cotton Manufacturers Institute, American Paper & Pulp Association, Association of American Railroads, several copper and brass mill companies, some members of the electrical manufacturing industry, Lithographers National Association Inc., the coal industry, and some segments of the public utilities industry.

Summary

Needed is an imaginative approach to the depreciation problem. If we don't get a more constructive depreciation system, we'll be fatally handicapped in fighting inflation and achieving long term prosperity.

Reform can get our capital goods industry off dead center. Poor business in that area has been at the bottom of the present recession. Stopgap, five-year amortization has demonstrated twice before, in the 1940s and early 1950s, what liberal treatment will do in accelerating equipment buying. Permanent reform would accelerate it permanently.

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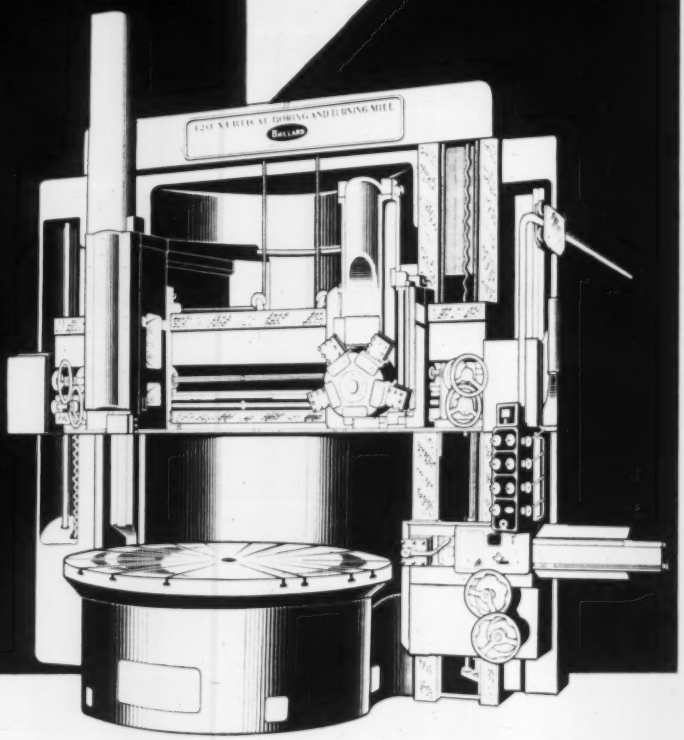

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U. S. Truck Output

	(In thousands) 1958	1957
June*	76.0	92.6
May†	78.0	101.2
April	74.5	104.4
Mar.	71.4	89.7
Feb.	72.9	92.6
Jan.	81.8	94.0

*Projected.
†Preliminary.
Source: *Ward's Automotive Reports.*

General Motors Corp.

Truck Sales Slow Down

Sales of light trucks are holding even with last year's figures. Production of medium is dropping. Makers of heavy duty types are most optimistic about 1958

THE RECESSION is hurting truck sales. About 870,000 trucks will be built in 1958 (19.7 per cent under last year) and some 735,000 sold (14.6 per cent below 1957), says Henry Ford II, Ford Motor Co. president.

The industry started the year optimistically despite the oncoming slump. Increased defense projects, the highway building program, and increased farm income were expected to hold sales at last year's level (860,000). But defense programs have lagged, and highway plans are just getting underway. Even farmers are postponing purchases. The slump also has reduced over the road hauling, which means many heavy truck users are deferring fleet purchases.

Results—Output has stayed consistently low through the first quarter, averaging 70,000 units monthly, vs. 80,000 in 1957. Instead of being helped by the usual spring build-up, second quarter production is holding at first quarter levels.

The first hopeful sign came last month when output inched to 78,000 (up from 74,000 in April). Build-ups in June are projected slightly below May's although there is disagreement on whether the rate will hold. Heavy duty builders reportedly feel it's a pessimistic projection; light truckmakers think it's too generous. Their attitudes are reflected by the output of different weight classes in the first quarter.

Lightweights Even—Light trucks grabbed only 67.2 per cent of total new truck registrations in the first quarter, compared with 67.2 per cent of the 1957 total. Mediums took 11.2 per cent of the first quarter registrations vs. 16.5 per cent of last year's total. Heavy trucks garnered 21.6 per cent of first quarter registrations, against 16.3 per cent of last year's.

The preceding '58 and '57 figures are on an old basis. They differ from the way '58 truck data are listed now because the industry changed methods of classifying mediums and heavies by gross vehicle weights (gvw).

Reclassifying — Trucks weighing 16,001 lb and up have been classed as heavy duty, but most manufacturers now extend the medium group to include vehicles weighing from 10,001 to 19,500 lb (instead of from 10,001 to 16,000 lb). The change is retroactive to early 1955.

As *Ward's Automotive Reports* explains, the change reflects a trend toward heavier axles and springs on medium duty trucks to increase carrying capacity. Ford's 2-ton truck previously carried a gvw of 12,000 lb. Changes in springs and axles have boosted the figure to 16,000, but it's still medium duty.

By considering a heavy duty truck as 19,501 lb and up, the industry has reversed traditional market ratios between medium and heavy trucks. Under the old system, medium weight registrations in the first quarter would have accounted for 11.2 per cent of the total, and heavy duty jobs would have taken 21.6 per cent. With the new method, medium trucks take 21.7 per cent, heavy duty vehicles 11.1 per cent.

Housecleaning Time — Weight

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groups aren't the only changes. Truck marketing is getting a strong boost because the industry expects stronger competition from railroads and water transportation as the St. Lawrence Seaway starts operating.

Ford Motor Co. has given the American Trucking Association $50,000 to help it publicize services supplied by trucks. The National Automobile Dealers Association wants to organize NADA truck committees in every state. Like ATA, NADA aims to spotlight the importance of trucks to industry and to project programs and activities to elevate truck merchandising.

Helpful Hints — NADA thinks many dealers don't realize that 83 per cent of owners have only one truck. Only 10 per cent own more than five, which means most dealers should aim at local and individual markets.

Such thinking is spurred by the recession, but the industry hopes if it gets a good start this year, it will be better prepared to meet stiffer competition in the years ahead.

Builders Co-operate—Builders are continuing to produce lighter trucks with a bigger payload and greater fuel economy.

Latest entry is GM's Truck & Coach Div.'s diesel highway tractor which makes heavy use of aluminum. Its curb weight is 10,450 lb. The GMC Model D860 can be used in the 55,000 lb and up hauling range and has a gvw of 30,000 or 33,000 lb, depending on axle and engine options.

Over-all cab length is 90 in., permitting use of 35 or 40 ft trailers in states with 45 and 50 ft length limits. A governor on the 189 or 210 hp (optional) diesel engines saves fuel by reducing maximum speed to as low as 1650 rpm in top gears. "This leaves plenty of power to handle loads at cruising speeds, yet holds the engine in its maximum fuel economy range," says Philip J. Monaghan, GMC's general manager.

Aluminum Engines Closer

General Motors Corp. says it has three experimental aluminum auto engines. The handbuilt V-8s weigh about 30 per cent less than their standard counterparts of comparable displacement and horsepower, reports Charles A. Chayne, vice president in charge of GM's engineering staff.

He points out that the saving equals the weight of one passenger and that the engines have higher output and higher compression ratios than present powerplants. They are liquid cooled.

Indicating GM wants to build aluminum engines for less than cast iron models, Mr. Chayne adds the company has tested aluminum alloys that give better wear resistance than cast iron. "We have also successfully tested several coatings (in cylinder bores) which appear more desirable than chrome plate," he adds.

Although Mr. Chayne didn't say so, GM has experimented with molybdenum sprayed on cylinder bores, which apparently has proved too costly for mass production. Several sources say high silicon aluminum alloys have been giving excellent results.

Detroit is about convinced that GM will introduce an aluminum engine by 1961 or 1962 (see STEEL, May 19, p. 99). Mr Chayne's report may be GM's last official word until it appears.

Daimler-Benz Runs Tests

Coincidental with GM's aluminum engine announcement, the Society of Automotive Engineers heard Eberhard Hundt, director of Daimler-Benz A. G., Stuttgart, Germany, discuss Mercedes-Benz's experience with aluminum engine parts.

Speaking at SAE's summer convention at Atlantic City, N. J., Mr. Hundt says the Mercedes-Benz 300 SL engine weighs 530 lb with a cast iron block, only 442 with an aluminum block. D-B uses the aluminum block only for special jobs, but it makes greater use of aluminum engine parts than most American manufacturers. Applications include pistons, connecting rods, piston rods, cylinder heads, diecast camshaft bearing supports, and intake manifolds.

Mr. Hundt says Daimler-Benz screws sparkplugs directly into the aluminum cylinder heads without using bushings. Cast aluminum parts are sanded with aluminum cut wire to avoid surface corrosion because steel wire particles become embedded in the soft metal.

The German automaker's experience shows aluminum has a 2:1 weight ratio over steel or cast iron. It has a 3:1 ratio in thermal conductivity and expansion, a 5:1 advantage in cutting speeds, and die and permanent mold castings can be controlled to 0.002 in. In Germany, the price differential of aluminum is 4:1, but Mr. Hundt claims fewer machining operations can reduce the final cost ratio, even reverse it.

U. S. Auto Output

Passenger Only

	1958	1957
January	489,357	642,090
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	340,000†	531,365
5 Mo. Total	1,895,021†	2,872,618
June	.....	500,271
July	.....	495,629
August	.....	524,354
September	.....	284,265
October	.....	327,362
November	.....	578,601
December	.....	534,714
Total	.....	6,117,814
Week Ended	**1958**	**1957**
May 3	78,434	119,999
May 10	78,506	125,924
May 17	87,407	172,390
May 24	86,589	127,428
May 31	66,330†	82,431
June 7	80,000*	129,517

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

AC Introduces Gas Saver

An automatic fuel regulator that cuts pressure when the engine is idling or operating at normal speeds will be marketed by GM's AC Spark Plug Div., Flint, Mich.

Called Acon-o-mizer, it will be sold for $9.90 through dealers, service stations, and wholesale and retail auto outlets. The unit, which weighs 12 ounces, is installed between the fuel pump and carburetor.

Gasoline from the fuel pump enters a built-in strainer in the base of the regulator unit. It leaves this chamber and passes into the carburetor fuel line through a diaphragm-controlled valve opening.

AC engineers claim the device will virtually eliminate flooding, stalling, and wasted fuel that goes with these conditions.

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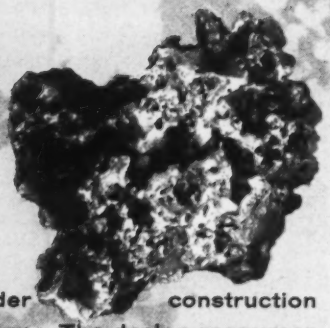

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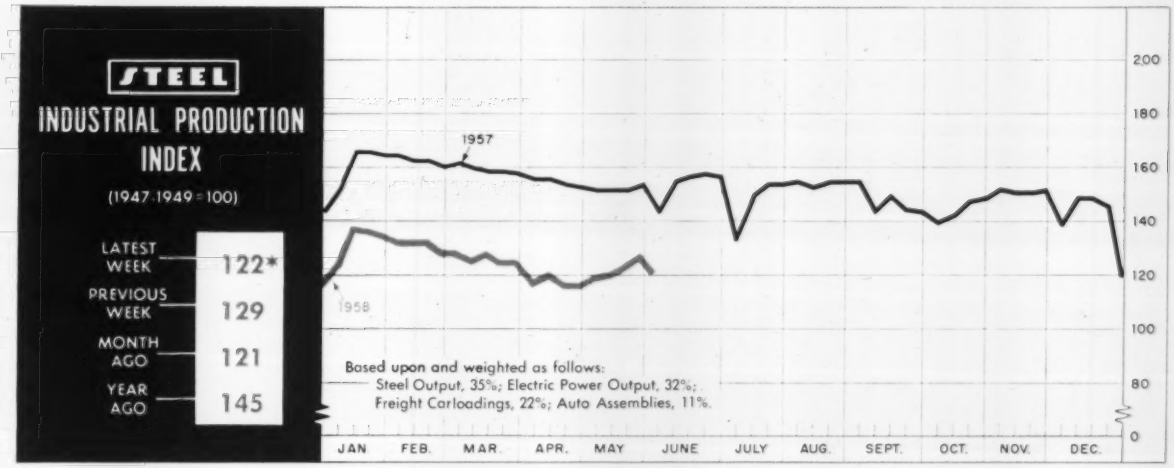

*Week ended May 31.

Business Ready To Resume Advance

ONLY a national holiday could halt the uptrend of STEEL's industrial production index. After a four-week rise, it dropped 7 points during the week ended May 31, but there's ample reason to believe that the business climate will continue its improvement in June.

Preliminary reports for the final May week pegged the index at 122 (1947-49 = 100), compared with 129 in the preceding week. Electric power output, freight carloadings, and auto production declined during the Memorial Day holiday.

This year's holiday week dip of 5.4 per cent compares with a fall of 5.8 per cent during the Memorial Day week of 1957, a 4.5 per cent drop in 1956, and a 6.5 per cent decline in 1955.

Gains Should Continue — One year ago, a 9-point drop in the week ended June 1 was erased by a 10-point rise the following week. The steady rise this year from 118 to 129 between Apr. 26 and May 24 shows industry has generated enough power for another fast recovery in early June.

The strength of steel production is a leading reason for expecting a quick return to pre-Memorial Day business levels. Output climbed for the sixth successive week in the period beginning June 2. It's the healthiest factor of STEEL's index. While steelmaking still lags below the 2,240,000 tons of June 1-8, 1957, it's 29 per cent higher than the low point this year—touched in the week ended Apr. 26.

The production estimate for the week beginning June 2 is 1,641,000 tons. The high for the year had been the preceding week's 1,567,000 tons. (See Page 137 for additional information on demand for steel.)

There's increasing evidence that most users of steel have completed inventory reductions. Says an Ohio steelmaker: "Our orders for June shipment show an improvement over May, even without a significant amount of ordering by automakers. Many small users are re-entering the

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,641[1]	1,567	2,240
Electric Power Distributed (million kw-hr)	10,800[1]	11,316	10,936
Bituminous Coal Output (1000 tons)	7,580[1]	7,170	9,750
Crude Oil Production (daily avg—1000 bbl)	6,280[1]	6,256	7,418
Construction Volume (*ENR*—millions)	$424	$588.1	$298.9
Auto, Truck Output, U. S., Canada (*Ward's*)	92,263[1]	112,909	110,868
TRADE			
Freight Carloadings (1000 cars)	525[1]	571	672
Business Failures (Dun & Bradstreet)	337	327	309
Currency in Circulation (millions)[3]	$30,813	$30,822	$30,660
Dept. Store Sales (changes from year ago)[3]	+3%	−2%	−1%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$21,117	$23,143	$21,171
Federal Gross Debt (billions)	$275.4	$274.9	$274.7
Bond Volume, NYSE (millions)	$20.8	$28.5	$16.2
Stocks Sales, NYSE (thousands of shares)	9,298	12,537	8,676
Loans and Investments (billions)[4]	$91.8	$91.8	$85.6
U. S. Govt. Obligations Held (billions)[4]	$30.9	$30.5	$25.1
PRICES			
STEEL's Finished Steel Price Index[5]	239.15	239.15	228.59
STEEL's Nonferrous Metal Price Index[6]	195.5	195.4	231.5
All Commodities[7]	119.3	119.3	117.2
Commodities Other than Farm & Foods[7]	125.2	125.2	125.2

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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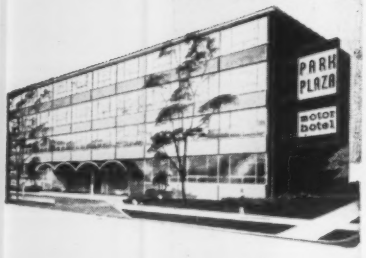

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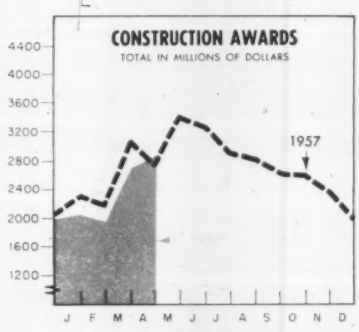
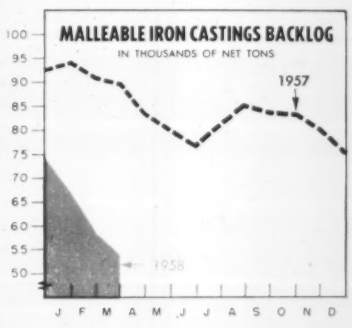
THE BUSINESS TREND





	Total		Building	
	1958	1957	1958	1957
Jan.	2,066.1	2,299.6	1,536.2	1,730.7
Feb.	1,953.4	2,161.0	1,478.1	1,695.5
Mar.	2,721.2	3,078.0	2,037.7	2,199.7
Apr.	2,881.0	2,776.4	2,198.0	2,069.7
May	.....	3,399.5	.....	2,416.8
June	.....	3,243.5	.....	2,341.5
July	.....	2,900.7	.....	2,247.6
Aug.	.....	2,818.0	.....	2,291.8
Sept.	.....	2,624.9	.....	2,092.2
Oct.	.....	2,613.8	.....	2,075.6
Nov.	.....	2,370.7	.....	1,808.5
Dec.	.....	1,982.3	.....	1,457.5
Totals	.....	32,268.4	.....	24,427.1

F. W. Dodge Corp.
Charts copyright, 1958, STEEL

	Shipments		Unfilled Orders*	
	1958	1957	1958	1957
Jan.	62.7	86.0	67.3	93.9
Feb.	54.7	78.0	59.0	90.7
Mar.	51.7	78.0	54.3	89.4
Apr.	...	80.3	...	83.1
May	...	76.5	...	79.8
June	...	72.6	...	76.3
July	...	57.7	...	80.7
Aug.	...	65.4	...	84.9
Sept.	...	62.5	...	83.4
Oct.	...	77.7	...	83.0
Nov.	...	67.9	...	80.1
Dec.	...	60.4	...	74.9
Total	...	863.0		

*For Sale. U. S. Bureau of the Census.

market, having depleted their stocks. Hedging against a possible price increase may play a part in keeping production firm through June."

Memorial Day observances played a direct part in declines in auto production. Assemblies in the week ended May 31 totaled 66,330 cars and 15,578 trucks. The previous week's total was 86,589 cars and 18,001 trucks. Chrysler Corp. announced that 75 to 80 per cent of its production was stopped in the last week of May. Despite slowdowns, production of 81,908 units was almost 10 per cent higher than that of the week ended Apr. 26—the low point of the year at 74,868 units.

Important Week Coming—Next week's production index could be one of the most significant reports of 1958. If it regains lost ground, it will be further evidence that business is on its way back.

Building Moves Ahead

Construction continues to chalk up gains. F. W. Dodge Corp., New York, reports contract total in April was $2,881,011,000, an increase of 4 per cent over April of last year. Contracts for nonresidential building in April amounted to $957.8 million. That's an improvement of 14 per cent from a year ago. Results in April reversed a trend of the first three months of 1958 which found contracts 11 per cent below those of the similar period of 1957.

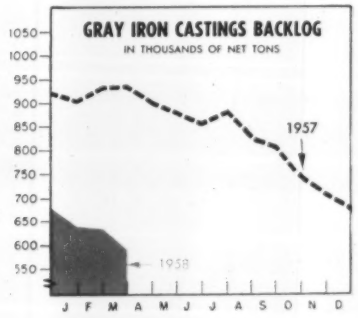
Dollar volume of building permits is rising, too. Dun & Bradstreet Inc. says the aggregate for 217 cities in April reached $590.5 million, against March's $564 million.

Steelmakers are beginning to profit from the advance in construction. The American Institute of Steel Construction Inc., New York, says new orders for fabricated structural steel in April totaled 208,161 tons. Bookings in March were 195,970 tons. April's total was the highest for any month since November, 1957.

Foundries Enjoy Gains

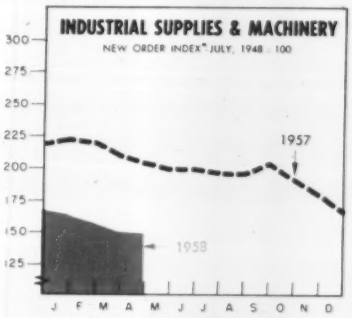
Users of castings may have completed their inventory adjustments. That's what several leading foundrymen say on noting an improvement in shipments of gray iron and steel castings in March.

Commerce Department statistics show shipments of gray iron castings rose from 753,306 tons in February to 795,568 tons in March. Deliveries of steel castings increased from 103,297 tons to 106,233 tons in the same period. Shipments of



	Shipments		Unfilled Orders*	
	1958	1957	1958	1957
Jan.	868	1,213	638	905
Feb.	753	1,103	632	931
Mar.	796	1,133	590	935
Apr.	...	1,120	...	899
May	...	1,112	...	880
June	...	1,058	...	853
July	...	954	...	880
Aug.	...	1,076	...	826
Sept.	...	990	...	805
Oct.	...	1,100	...	740
Nov.	...	940	...	705
Dec.	...	864	...	676
Total	...	12,663		

*For sale. U. S. Bureau of the Census.



	1958	1957	1956
Jan.	163	221	190
Feb.	157	219	190
Mar.	149	210	190
Apr.	148	203	195
May	...	199	199
June	...	199	197
July	...	197	203
Aug.	...	197	211
Sept.	...	203	203
Oct.	...	192	206
Nov.	...	180	220
Dec.	...	167	218

*Seasonally adjusted.
Amer. Supply & Machinery Mfrs.' Assn.

malleable iron castings declined from 54,650 tons to 51,708.

Foundrymen say shipments would have to rise for several months before signaling a general improvement in business conditions.

Confidence Continues

Optimism of businessmen hasn't been shaken by recession. For proof, look at the number of new business incorporations reported by Dun & Bradstreet. Some 46,545 new businesses were chartered in the first four months of this year, a decrease of only 4 per cent from the 48,539 chartered in the same months of 1957.

New stock corporations numbered 11,329 in April, a drop of 2.9 per cent from the March total of 11,670.

Business failures mounted in May but remained far behind rate of new incorporations. Casualties totaled 337 in the week ended May 22, compared with 327 in the previous week.

Orders, Output Improve

The outlook for new orders has become steadily brighter since February, but summer months will bring a slowdown in business. That's the gist of a National Association of Purchasing Agents survey.

Some 36 per cent of executives quizzed told NAPA incoming order volume improved in the past month. Only 19 per cent reported a decrease. The proportion of respondents saying production is up rose from 16 per cent last month to 29 per cent this month. In the offing: An "inevitable summer lull" resulting from vacations and automotive shutdowns.

Trends Fore and Aft

• New orders for durable goods continued to decline in April, the Commerce Department reports. After seasonal adjustment, new orders amounted to $10.6 billion in April, compared with $11.5 billion in March. Shipments of durable goods dipped from $11.7 billion to $11.5 billion. Shipments of all goods dropped from $24.9 billion to $24.8 billion.

• Production workers' buying power declined between March and April because of reduced hours of work and increased prices, the Labor Department says. Weekly spendable earnings for a worker with no dependents in April were $66.30. In March, earnings were $66.81.

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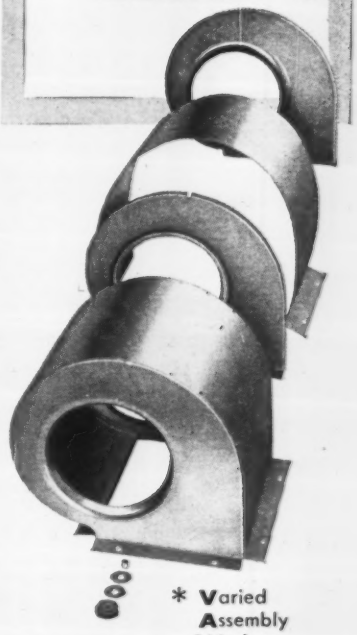

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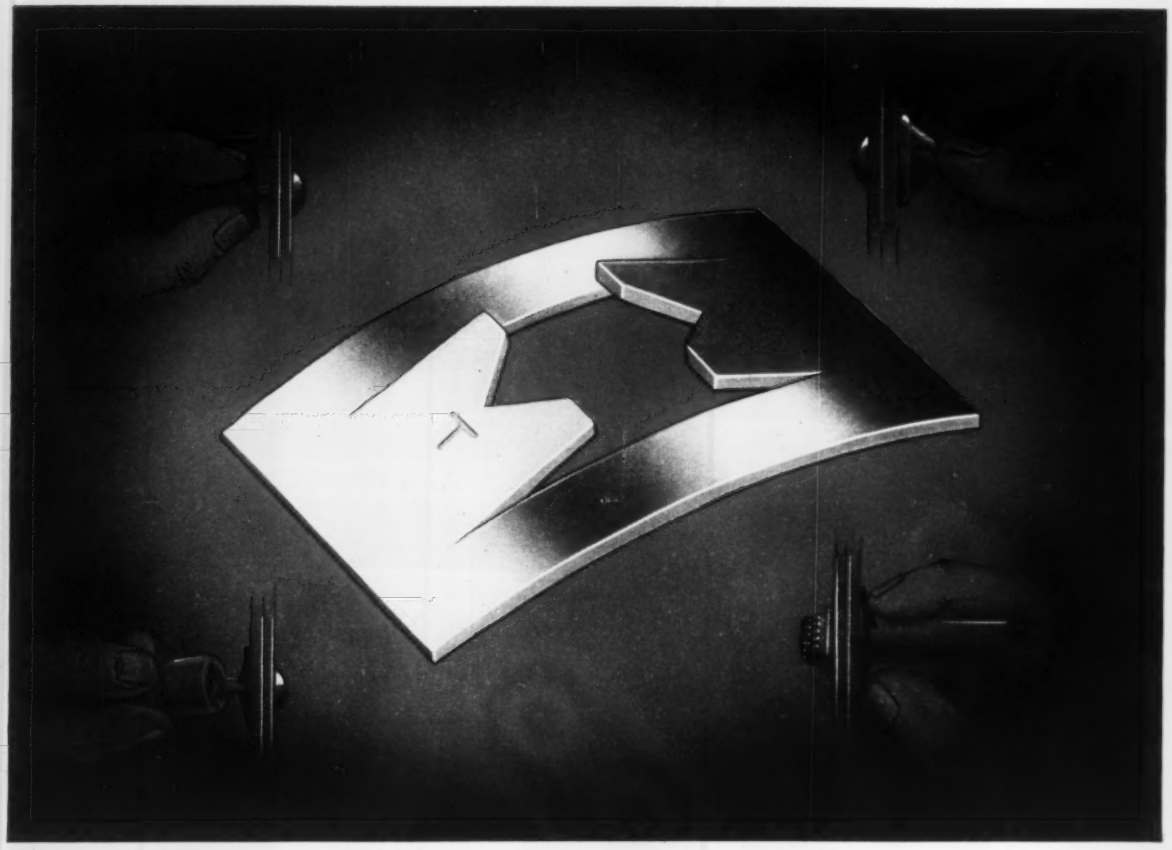

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In a split-second, this low-cost Tinnerman Push-On SPEED NUT arches its spring-steel back, then bites hard to make a positive attachment on unthreaded studs, rivets, tubing, nails, jewels, small housings.

Application is easy—finger pressure starts it; a push with a simple hand tool locks it under live spring tension. No threads to worry about, no spot welding, no riveting, no special inserts, bushings or washers necessary. Elimination of extra parts and assembly operations may save you up to 50% or more in fastening costs.

Push-On SPEED NUTS lock on everything from thermoplastics to die-cast, chrome-plated steel. Hundreds of variations to fit any shape or size stud —from very small diameters to larger rectangular shapes. Some Push-Ons have "caps" that cover exposed shaft, axle or stud ends.

Check Sweet's Product Design File, section 8-T. Or look under "Fasteners" in the Yellow Pages and call your Tinnerman representative for complete information and samples. Or write to:

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HENRY WOHLERS
new post at Michigan Tool

HERBERT C. CRESS
Ford Instrument v. p.-works mgr.

JOHN C. WALLACE
Walworth v. p.-operations

WILLIAM H. MUCHNIC
Rockwell Mfg. v. p.

Henry Wohlers was appointed to the new post of staff engineer for the machine and tools division of **Michigan Tool Co.**, Detroit. He will co-ordinate his efforts in systems engineering of complete automated gear lines, heading up the firm's field engineering service.

Herbert C. Cress fills the new post of vice president and works manager, **Ford Instrument Co.**, division of Sperry Rand Corp., Long Island City, N. Y. He was formerly vice president-operations, Sperry Farragut Co., division of Sperry Rand in Bristol, Tenn.

Eugene F. Hill was appointed market manager, new products division, **Wolverine Tube Div.**, Calumet & Hecla Inc., Allen Park, Mich. He will study potential markets for products of Wolverine's development laboratory and research facility.

Kenneth W. Donle was appointed chief engineer, **Tube Reducing Corp.**, Wallington, N. J.

A. J. Kathmann was promoted to works manager, **Gardner-Denver Co.**, Quincy, Ill. He succeeds **Robert Williams**, who was made general plant adviser. **G. A. Schumacher**, former superintendent of the LaGrange, Mo., foundry, was made manager of foundry operations, with headquarters in Quincy. He is succeeded at LaGrange by **E. J. Brown**, former assistant superintendent. **James A. Van Doorn**, in addition to duties as manager of facilities, was placed in charge of maintenance divisions.

John C. Wallace, former vice president-manufacturing, **Walworth Co.**, New York, fills the new post of vice president of operations. He is in charge of manufacturing, engineering, and development. Mr. Wallace joined the company in 1957. He previously was vice president and general manager of Hunt Spiller Mfg. Corp.

Temco Aircraft Corp., Dallas, promoted **I. Nevin Palley** to senior vice president; **Robert E. Galer** to vice president-engineering, succeeding Mr. Palley. Mr. Galer was manager-engineering programs.

John J. Bollinger succeeds **W. M. Stevenson**, retired, as western manager of **Crucible Steel Co. of America's** spring division sales.

Albert H. Damon joined **Edgcomb Steel of New England Inc.**, Nashua, N. H., as vice president-sales. He has been with Dun & Bradstreet for 22 years.

A. James Crookes was appointed plant manager of **Colson Corp.'s** Jonesboro, Ark., plant. He joined the firm in 1955 and has served as director of production engineering.

Paul Manocchio was elected vice president-production, **E. F. Drew & Co. Inc.**, New York.

Steelcraft Mfg. Co., Cincinnati, appointed **Maurice Schulzinger** vice president, manager-steel building division; **David Liebman Jr.**, vice president, manager-building products division; **Frank Niesz**, assistant secretary and works manager.

William H. Muchnic was elected a vice president, **Rockwell Mfg. Co.**, Pittsburgh. He is president of LFM Mfg. Co. Inc., Atchison, Kans., a subsidiary.

W. K. Lowe was named to the new post of senior staff engineer, **Sanderson-Halcomb Works**, Syracuse, N. Y., Crucible Steel Co. of America. He is succeeded as works chief engineer by **A. G. Nicola**, former chief engineer at the Park Works, Pittsburgh.

Melvin H. Campbell, former secretary, was elected executive vice president, **Campbell Chain Co.**, York, Pa. **Robert P. Leister**, former controller, was elected secretary-treasurer.

Philip S. Fogg, chairman, **Consolidated Electrodynamics Corp.**, Pasadena, Calif., and chief executive officer of the firm who relinquished its presidency in June, 1956, was reappointed president. He remains as chairman. **Hugh F. Colvin**, former president, was appointed senior vice president in charge of the Pasadena divisions. Newly appointed vice presidents are **Kennett W. Patrick**, director-transducer division; and **Frank M. Jenner**, general manager-Rochester, N. Y., division.

J. D. Morris was made sales manager, utility tractor and equipment sales department, **Allis-Chalmers Mfg. Co.**, Milwaukee.

Edward A. Reynolds was appointed manager of quality control by **A. M. Byers Co.**, Pittsburgh. He was

ALBERT L. KNAPP

EDWARD J. SHAGES

head Pratt & Whitney division operations

L. L. FERRALL

J. D. DICKERSON

Crucible Steel executive positions

quality control consultant for General Tire & Rubber Co.

Pratt & Whitney Co. Inc., West Hartford, Conn., named **Albert L. Knapp**, vice president-manager, machinery division, and **Edward J. Shages**, vice president-manager, cutting tool and gage divisions, to head sales activities of their respective operations. Sales functions of these divisions were formerly the responsibility of the late **Alexander S. Keller**, vice president-general sales manager.

Philip A. Gaebe was made eastern regional sales manager at Pittsburgh for **Kaiser Chemicals Div.**, Kaiser Aluminum & Chemical Sales Inc. He replaces **John B. Minshall**, transferred to sales headquarters in Oakland, Calif., as administrative assistant to the general sales manager.

Dr. Joseph M. Denney joined the nuclear electronics department at **Hughes Aircraft Co.**, Culver City, Calif. He was in charge of solid state physics and metallurgy at Aeronutronic Systems Inc.

Herbert M. Bevans was appointed executive engineer for chassis, electrical and truck, in **Chrysler Corp.'s** engineering division, Detroit. He is succeeded as chief engineer-vehicle testing by **William R. Rodger**, in charge of the engineering proving grounds near Chelsea, Mich.

Elliott Mehrbach was made chief engineer, communications division, **Topp Mfg. Co.**, Los Angeles, a division of Topp Industries Inc. He was chief engineer, Maryland Electronic Mfg. Corp., division of Litton Industries.

Crucible Steel Co. of America, Pittsburgh, elected **L. L. Ferrall** executive vice president. **J. D. Dickerson**, former manager of steel production, succeeds Mr. Ferrall as vice president-operations.

A. L. Gray was named director of sales for **Paudler Co.**, a division of Paudler Permutit Inc., Rochester, N. Y.

Stuart J. Northrop was made chief industrial engineer, industrial engineering department, **SKF Industries Inc.**, Philadelphia. He succeeds **J. L. Listman**, named to the new post of staff assistant.

Copperweld Steel Co., Pittsburgh, appointed **Carl I. Collins** vice president and assistant to the president. He was vice president in charge of **Superior Steel Div.** at Carnegie, Pa., and prior to acquisition by Copperweld last November, was its president. **Joseph W. Kennedy Jr.** was named vice president-Superior Steel Div. He is succeeded as vice president, **Ohio Seamless Tube Div.**, Shelby, Ohio, by **Reid M. Pittenger**, former manager of industrial relations.

J. F. Collins was made assistant manager, Pittsburgh region, **Electro Metallurgical Co.**, division of Union Carbide Corp.

Reynolds Metals Co., Louisville, named **M. Neal Burleson** to the new post of manager, aluminum can market sales. He was project director for aluminum cans in the product development department.

Clinton F. Kucera was made manager, New York district office, **Allis-Chalmers Mfg. Co.** He succeeds **N. W. Landis**, recently made manager, northeast region.

Noberto Voloshin was named chief engineer at **Hirt Combustion Engineers**, Los Angeles.

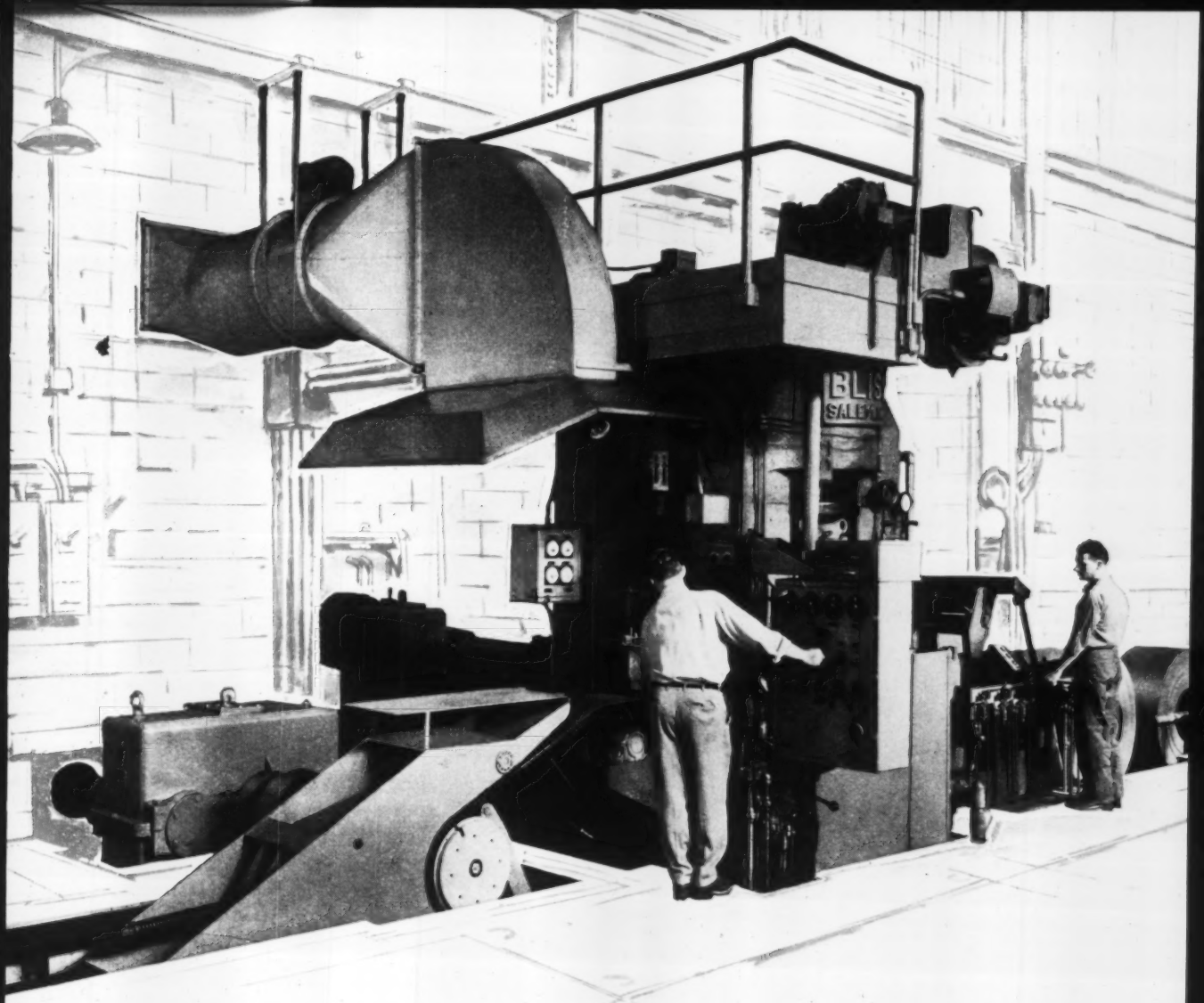
K. A. Vaughan was named manager of product applications for the industrial division of **Gould-National Batteries**, Trenton, N. J. He was

CARL I. COLLINS

JOSEPH W. KENNEDY JR.

REID M. PITTENGER

Copperweld Steel promotes executives



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The operating men at Thompson Wire's Sparrows Point plant especially appreciate the accessibility of controls on their Bliss one way cold mill. That's easy to understand when you realize that they use the mill to convert a wide variety of material ranging from ordinary carbon steels to "aircraft quality" and special saw blade steels.

The gages they roll range from .015" to .125", the widths from 14" to 20". The speed of the mill varies, of course, with the steels being rolled, but its top average running speed is about 1000 fpm. Bliss supplied the mill with complete entry and delivery equipment – entry coil ramp, mandrel-type payoff reel, coil hoist and positioner, combination pinch roll and flattener, tension reel coil buggy and belt wrapper.

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J. WESLEY LEE
heads Challenge Machinery

WAYNE B. YARNALL
Edward Gray vice president

WILLIAM D. BICKEL
Dravo v. p.-div. gen. mgr.

JAMES A. D. GEIER
Cincinnati Lathe & Tool v. p.

HAROLD W. SCHMID
General Metals posts

northeastern regional manager and export manager for the company.

William D. Bickel was elected a vice president of **Dravo Corp.**, Pittsburgh, and was appointed general manager, machinery division. He was manager of the division's engineering and construction department.

James A. D. Geier was elected vice president, **Cincinnati Lathe & Tool Co.**, Cincinnati, and also was appointed assistant general manager. He has served for the last four years as assistant to the sales manager.

Inland Steel Products Co. appointed **Paul C. Dunn** Los Angeles regional sales manager for commodity, metal lath, and engineered products. The region comprises Arizona, California, and Nevada.

John T. Thompson was appointed manager of the newly formed distributor products division, **Raytheon Mfg. Co.**, Waltham, Mass. He was manager-distributor sales, electronic components division, General Electric Co.

Harold W. Schmid, vice president of **General Metals Corp.**, Oakland, Calif., and general manager of its Houston forge plants, was assigned additional responsibility of general manager of the firm's foundry and forge plants in Los Angeles, where he will have his headquarters. **Leo Wansink**, former manager of the Los Angeles plant, was made assistant to the president.

Cameron Iron Works Inc., Houston, appointed **James F. McKeighen Jr.** district sales manager of the Rocky Mountain area, and western United States.

H. E. Seifer, works manager, **Oilgear Co.**, Milwaukee, was elected a vice president.

William C. Wichman was made general manager, **Hotpoint Co.**, division of General Electric Co., Chicago. He succeeds **John C. Sharp**, who resigned as president and general manager. Mr. Wichman, a vice president of GE, was general manager, General Electric Supply Co., a division, Bridgeport, Conn.

Bay E. Estes Jr. was made vice president-marketing, **United States Steel Corp.**, Pittsburgh. He will supervise advertising, commercial research, product development, and market development divisions, and the administrative services of the commercial department. Mr. Estes was director, staff administration.

J. Wesley Lee was elected president and general manager, **Challenge Machinery Co.**, Grand Haven, Mich. As president, he succeeds his father, the late **J. Edgar Lee.** He was elected executive vice president in 1953; general manager in 1955. **Robert C. Gould** was elected vice president. He is assistant sales manager, and assistant secretary.

Wayne B. Yarnall was elected vice president in charge of engineering and construction for **Edward Gray Corp.**, Chicago. He will have headquarters at the Pittsburgh area office in Braddock, Pa.

OBITUARIES...

Ernest G. de Coriolis, 75, director of research, **Surface Combustion Co.**, Toledo, Ohio, died May 18.

William H. Eisenman, 73, national secretary of **American Society for Metals**, Cleveland, died May 30.

William H. Noelting, president, **Faultless Caster Corp.**, Evansville, Ind., died May 22.

Max M. Monroe, 65, former general manager, **Aeroproducts Div.**, General Motors Corp., died May 20 in Dayton, Ohio.

Frank M. Small, 65, superintendent of industrial relations for the plants of **Pressed Steel Div.**, Republic Steel Corp., Cleveland, died May 28.

George H. Ha r, 62, assistant to the president of **Republic Aviation Corp.**, Garden City, N. Y., died May 26.

Dr. Meno Lissauer, 78, chairman, **Associated Metals & Minerals Corp.**, New York, died May 27.

J. Wilbert Rankin, 48, purchasing agent, **Rockwell - Standard Co.**, Coraopolis, Pa., died May 24.

James M. Tough, Atlanta district manager, forge and fittings division, **W-S Fittings Works**, H. K. Porter Company Inc., died May 10.

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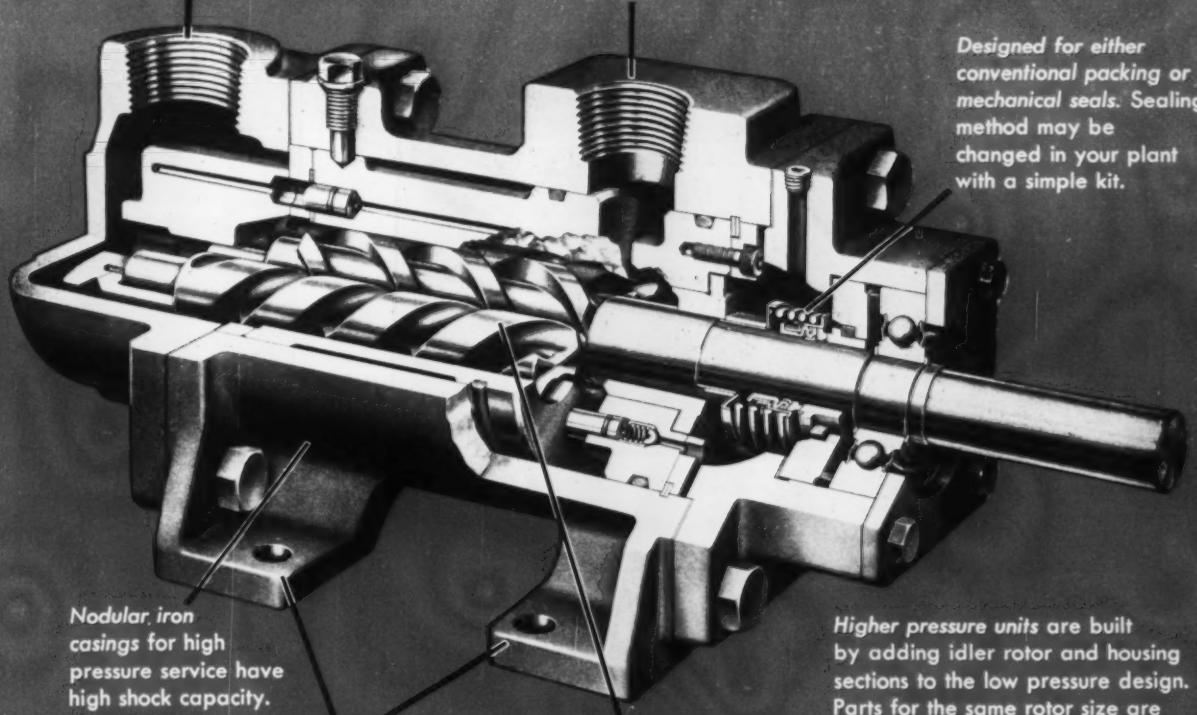
De Laval IMO pumps have proved that they do a dependable job over long years of service. The reason is IMO design simplicity. These constant displacement rotary pumps have only three moving parts—smoothly intermeshing rotors that propel the fluid axially in a steady flow without churning, pocketing or pulsation. There are no timing gears, cams, valves, sliding vanes, or reciprocating parts to wear or become noisy. *Quiet*, compact IMO pumps are excellent for direct-connected, high-speed operation.

In addition to these basic pumping advantages, the improved IMO gives you important new benefits shown in the cutaway illustration below.

DE LAVAL IMO PUMPS can also be used as hydraulic motors.



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Designed for either conventional packing or mechanical seals. Sealing method may be changed in your plant with a simple kit.

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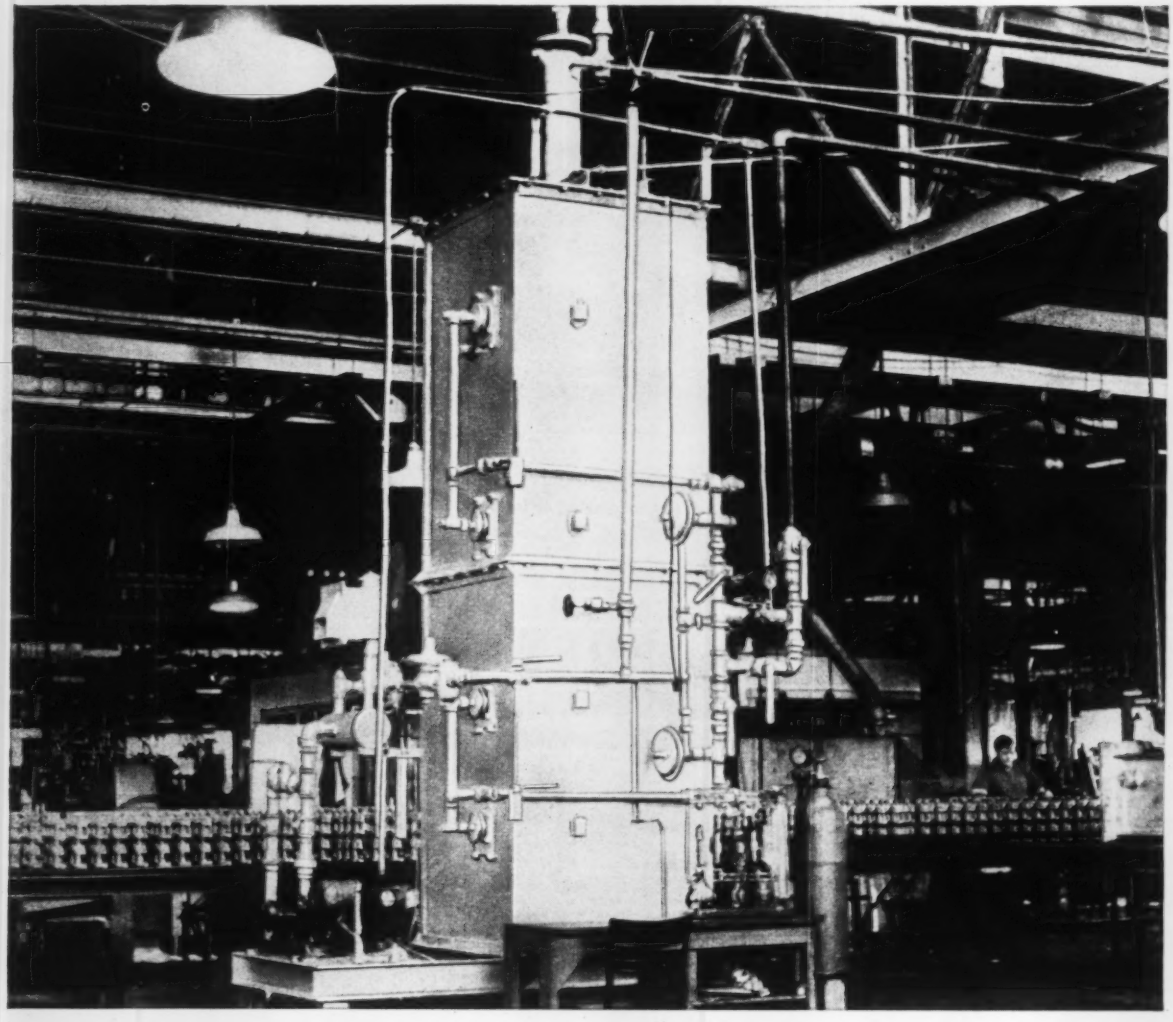
1,800,000 cfh
of RX generator atmosphere



That's the combined capacity of all the Surface RX® gas generators sold since this first one started operating April 4, 1941. This was the first practical catalytic gas generator for continuous bright gas carburizing . . . and it's still in use at Warner Gear Division, Borg-Warner Corp.

Such long-term reliability is only one of the reasons why so many plants standardize on Surface gas generators. Controllability, flexibility, turn-down operation, variety of gases and capacities are some of the other reasons. We'll be happy to tell you more about them.

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wherever heat is used in industry

Atomic Plant Passes Crucial Test

Six months of successful operation of nation's first full-scale central station at Shippingport, Pa., proves accuracy of nuclear core design calculations

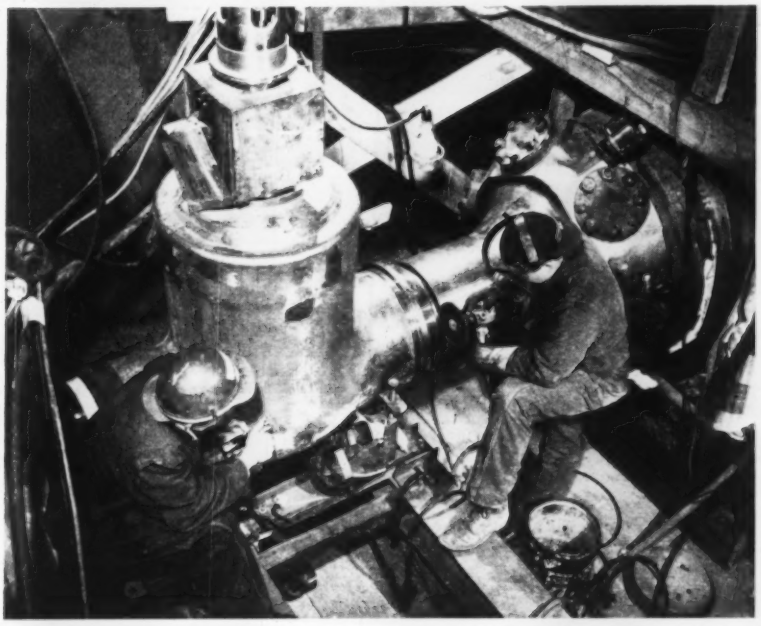
THE NATION'S first full-scale central station atomic powerplant has completed six months of operation. The Shippingport, Pa., facility, which has a design capacity of 60,000 kw, went critical on Dec. 23, 1957. It is generating electricity for civilian use.

The station is a joint project of the Atomic Energy Commission and Duquesne Light Co. It was designed and developed by Westinghouse Electric Corp. under the direction of AEC's Naval Reactors Branch. Duquesne Light furnished the electric generating portion of the plant, contributed $5 million toward the nuclear portion, and is operating the station.

Materials—Many of the construction problems were without precedent. To insure safety, the nuclear section had to be specially designed. It required 8712 tons of steel, 126 miles of electrical wiring, 33,711 cu yd of concrete, and nearly 29,000 sq ft of concrete blocks.

More than 14 miles of piping (293 tons) were used. Over 60 welders had to be trained for the joining process used. About 25,000 field welds were made, and most of them were inspected with x-rays to make sure there would be no leaks. Much of this work was done by Dravo Corp.

The most trying job involved construction of the plant's atomic furnace, fueled by 14 tons of natural uranium and 165 lb of highly enriched uranium seed, and cooled by some 55,000 gpm of pure water. The outer shell housing the reactor is 33 ft high, 9 ft in diameter, and has walls 8 in. thick. In place, the reactor vessel weighs nearly 350 tons, including the 58-ton uranium core and control rods.



WELDING PIPING SYSTEMS for the atomic powerplant at Shippingport, Pa., was complicated by limited working space and the size of the components. Here a Dravo Corp. welder grinds down a weld on a stainless steel manual stop valve at the inlet to one of the heat exchangers

Armco Offers Wider Strip

Armco Steel Corp. has begun production of stainless and electrical strip on its $26-million hot mill (56 in.) at its Butler, Pa., Works. It is the largest project in the $80-million expansion and improvement program at that works. Clyde G. Davies, vice president in charge of the company's Armco Div., says trial runs have shown that the mill can roll a strip that is extremely uniform in thickness.

It replaces (and doubles the capacity of) the old Butler strip mill. Three 80-ft slab heating furnaces have been installed, more than doubling present heating capacity.

The mill can roll 52 in. wide material, delivering strip to the coiler at speeds up to 2000 fpm. The strip will enter one of two new downcoilers which can handle a 16,000 to 17,000 lb coil, vs. 7000 to 13,000 lb before.

The mill was designed and built by Continental Foundry & Machine Div., Blaw-Knox Co., Pittsburgh. Westinghouse Electric Corp., that city, furnished the electrical equipment.

Boosts Can Plant Capacity

American Can Co., New York, has started manufacturing key-opening cans at its St. Louis plant for vacuum packaging of coffee in the area. High speed, automatic machines will produce the cans at a rate of more than 300 a minute.

Higbie Mfg. Expanding

Higbie Mfg. Co., Rochester, Mich., will occupy a $500,000 plant being built at Archbold, Ohio. The firm will make small diameter, thin wall, steel tubing in the 30,000 sq ft manufacturing area.

Allis-Chalmers To Build

Allis-Chalmers Mfg. Co., Milwaukee, plans to build a $250,000 processing pilot plant at its Carrollville, Wis., property for experimental work in such operations as cement and taconite ore processing.

Enlarges Facilities

A 30 per cent increase in tungsten and molybdenum manufacturing facilities has been announced by the Lamp Div., Westinghouse Electric Corp., Pittsburgh. The expansion was made at the division's

headquarters plant at Bloomfield, N. J. Westinghouse also announced completion of an electrical equipment manufacturing and repair plant at Kansas City, Mo.

Launches Alumina Carrier

Aluminium Ltd., Montreal, Que., added an alumina carrier, *S. S. Sunrhea,* to its 80-ship fleet. Extensive use of aluminum as a structural material (165 tons) will increase the ship's carrying capacity by 235 tons. Deadweight of the vessel is 16,000 long tons. It will be finished this summer.

Buys into Allison Steel

Kaiser Steel Corp., Oakland, Calif., has made a substantial investment in stock of Allison Steel Mfg. Co., Phoenix, Ariz. Kaiser will hold about 45 per cent of the voting stock in Allison, fabricator and erector of structural steel. Allison also produces a wide variety of specialized steel products, including mine cars and tanks.

New Aluminum Warehouse

Midwest Aluminum Supply Corp. has been organized at 2530 W. Third St., Cleveland, Ohio. L. A. Kristoff is president. The firm will distribute aluminum mill products made by Olin Mathieson Chemical Corp.

Consolidates Operations

Electric Auto-Lite Co., Toledo, Ohio, will consolidate all its foundry operations at Fostoria, Ohio. The Burt foundry in Toledo was closed recently and the foundry at Mt. Vernon, Ill., will be closed within three months and its operations moved to Fostoria.

Two Firms Change Names

Rockwell Spring & Axle Co., Coraopolis, Pa., changed its name to Rockwell-Standard Corp. Its Blood Bros. Machine Div., maker of universal joints, will be known as the Universal Joint Div. of Rockwell-Standard and will continue to operate the Allegan, Mich., plant.

Oregonia Bridge Co., Lebanon, Ohio, changed its name to Dave Steel Corp.

CONSOLIDATIONS

Roll Formed Products Co., Youngstown, purchased **FlexAngle Corp.,** West Hartford, Conn. W. W. Bresnahan, vice president of Roll Formed, has been appointed president of FlexAngle. Its manufacuring and general offices will be at 3780 Oakwood Ave., Youngstown, Ohio.

Koehring Co., Milwaukee, purchased **Ka-Mo Tools Inc.,** Cicero, Ill., producer of special earth drilling and boring equipment. The Cicero plant will be operated as a department of Koehring's Kwik-Mix Div.

A. M. Castle & Co., Franklin Park, Ill., acquired **Nottingham Steel & Aluminum Co.,** Cleveland, and will operate the property as the Nottingham Div. under the presidency of E. W. Harwell.

ASSOCIATIONS

American Society of Tool Engineers, Detroit, elected these officers: President and chairman, G. A. Goodwin, Master Electric Co., Dayton, Ohio; vice president, Wayne Ewing, Arrowsmith Tool & Die Co., Los Angeles; vice president, H. Dale Long, Scully-Jones & Co., Chicago; vice president, William Moreland, F. E. Myers & Bro. Co., Ashland, Ohio; vice president, D. A. Schrom, York Div., Borg-Warner Corp., York, Pa.; treasurer, P. R. Marsilius, Producto Machine Co., Bridgeport, Conn.; secretary, C. M. Smillie, C. M. Smillie Co., Ferndale, Mich.; executive secretary, H. E. Conrad; and assistant executive secretary, A. R. Putnam.

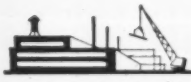
Industrial Research Institute Inc., New York, named Dr. F. W. Stavely, Firestone Tire & Rubber Co., Akron, president. Dr. R. W. Cairns, Hercules Powder Co. Inc., Wilmington, Del., was named vice president and president-elect.

Non-Ferrous Founders' Society, Evanston, Ill., elected these officers: President, P. E. Lankford, East Birmingham Bronze Foundry Co., Birmingham; first vice president, M. E. Nevins, Wisconsin Centrifugal Foundry Co. Inc., Waukesha, Wis.; second vice president, E. G. Brumund Jr., Brumund Foundry, Chicago; executive secretary and secretary-treasurer, Herbert F. Scobie; and assistant secretary-treasurer, Florence M. Guernier.

NEW OFFICES

Inland Steel Co., Chicago, opened a Texas district sales office at 1300 Main St., Houston, Tex. It is staffed by Lawrence Chamberlain, district manager of sales, and his assistant, C. E. Wolfe. "Our present growth program will double our wide-flange beam capacity, increase our cold-rolled sheet capacity by 50 per cent, and provide us with more steel to round out our production of other products such as galvanized sheets," says J. F. Smith Jr., vice president-sales. "This expansion puts us in a position to widen our area of distribution."

Pennsalt Chemicals Corp., Philadelphia, established a sales office for its corrosion engineering products at 6317 Raytown Rd., Kansas City, Mo. The office is managed by E. H. Garnett of the Shutt Process Equipment Corp.

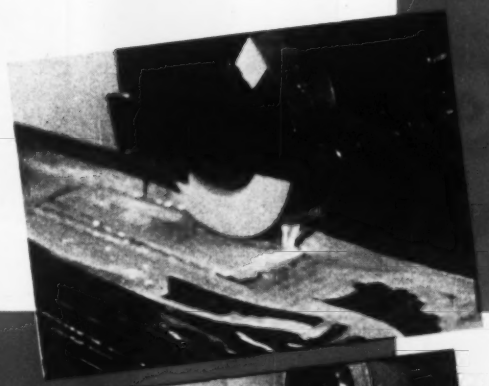


NEW PLANTS

Republic Steel Corp., Cleveland, formally dedicated its plant at Nitro (Charleston), W. Va. It will make 55-gallon barrels from 18-gage sheets of carbon steel (36 by 71 in.). Capacity: More than 1 million barrels a year.

Potter & Brumfield Inc., Princeton, Ind., has leased a plant at 135 Oxford St., Guelph, Ont., for manufacture of relays by its subsidiary, Potter & Brumfield Canada Ltd. The Princeton firm is a subsidiary of American Machine & Foundry Co., New York.

Applied Research Laboratories, Glendale, Calif., opened a $600,000 plant containing 51,000 sq ft of area for research, production, testing, and administration. The firm is a pioneer in automatic spectroscopy.



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EXOTHERMIC 1 FERRO-CHROME
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Canton, Ohio
25 LBS. CHROMIUM
3 LBS. CARBON
CHROM-ADD
EXOTHERMIC 2 FERRO-CHROME
Ohio Ferro-Alloys Corporation
Canton, Ohio
25 LBS. CHROMIUM
2 LBS. CARBON
CHROM-ADD
EXOTHERMIC 3 FERRO-CHROME
Ohio Ferro-Alloys Corporation
Canton, Ohio
25 LBS. CHROMIUM
1.25 LBS. CARBON
CHROM-ADD BRIQUETS
(EXOTHERMIC FERROCHROME)
12 BRIQUETS CONTAINING
EXACTLY 2 LBS. CHROMIUM EACH
CHROM-SIL-ADD
EXOTHERMIC 1 SILICO-CHROME
Ohio Ferro-Alloys Corporation
Canton, Ohio
18 LBS. CHROMIUM
9 LBS. SILICON
0.5 LBS. CARBON
OM-SIL-ADD
MIC 2 SILICOCHROME
Ferro-Alloys Corporation
Canton, Ohio
22 LBS. CHROMIUM
11 LBS. SILICON
0.35 LBS. CARBON
MAN-ADD
EXOTHERMIC MANGANESE
Ohio Ferro-Alloys Corporation
Canton, Ohio
40 LBS. MANGANESE
4 LBS. CARBON
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Technical Outlook

NICKEL STRIP FROM POWDER— Roll compacting nickel powder in a metal mill makes green strip which is 77 to 88 per cent as dense as pure nickel, says Stanat Mfg. Co. Inc., Westbury, N. Y. After sintering around 2000° F, cold reducing, and intermediate and final annealing, the strip has the same density, tensile strength, and ductility as that of cast, rolled, and annealed pure nickel. Such strip can be further reduced 45 per cent without annealing. Tensile strength: 95,000 psi.

NEW USE FOR PORCELAIN—The ceiling of the Hampton Roads Tunnel is made of porcelain-enamel-on-aluminum panels. They were easy to install because of their lightness. Other advantages: They have an easy-to-clean, reflecting, noncorroding surface.

CHECKS HIDDEN CONCENTRICITY— Stanford Research Institute's Poulter Laboratories, Menlo Park, Calif., worked out a device which accurately locates one part buried in another. It's said to work when conventional methods fail. The principle: Variations in magnetic fields which tell whether a hidden part is off center, tilted, centered, or symmetrically placed.

BETTER RUST PREVENTION—Preventives made with a refined microcrystalline wax base and added inhibitors effectively protect carbon and low alloy steel tubing, says Superior Tube Co., Norristown, Pa. The conclusion is based on a series of tests in which coated samples were exposed to acid fumes, warehouse atmospheres, high humidity, and above-room temperatures.

ELECTROLESS PLATE FOR MG—Dow Chemical Co., Midland, Mich., has come up with a new electroless process for nickel plating magnesium and other metals. It's expected to find applications in electronic equipment, printing cylinders and plates, and other surfaces that require high wear resistance. The method (it's done by immersing the metal in a special nickel solution) has all the advantages of other electroless nickel processes, says Dow, but does not use hydrochloric acid which attacks magnesium. The nickel plate contains 7 to 9 per cent phosphorus.

VAPOR LUBRICANT— A mixture of jet fuel and air is the latest Air Force approach to high temperature bearing operation. A hydrocarbon-air vapor forms a film on rollers and balls to keep them operating at 1000° F. Under partial loads, ordinary tool steel bearings operate satisfactorily at 900° F and 10,000 rpm. Shell Oil Co., New York, developed the technique with scientists from Air Research Development Command, Wright Air Development Center, Dayton, Ohio.

TUMBLING TABLE— A vibrating table loaded with aluminum oxide grit and sprayed with detergent substitutes for a tumbling barrel at Convair's Ft. Worth, Tex., plant. The table, which has high sides to contain the grit, is used to deburr lengthy B-58 parts. It's about eight times as efficient as hand deburring.

FOAM PACKAGE PROTECTS INSTRUMENT— G. M. Giannini & Co. Inc., Los Angeles, is shipping delicate gyroscopic stabilizing systems for ICBMs in flexible urethane foam. The special package eliminates the need for elaborate hand wrapping. The packaged instruments weren't damaged when dropped 42 in. onto concrete.

FOIL WELDED CONTINUOUSLY— Aluminum foil can be welded in continuous seams with a new ultrasonic unit. The high frequency sound waves cause a plastic flow between the parts being joined. The welder can be hand operated, or can be built into automated production and packaging lines, says Gulton Industries Inc., Metuchen, N. J.

BRILLIANT REFLECTORS— Vacuum metallized Mylar, a weatherable Du Pont plastic, was bonded to Kaiser mill-finish aluminum sheets to make the reflectors for the new runway lighting system at Washington National Airport. The composite product, called Dynasyl by its maker, W. J. Ruscoe Co., Akron, can be formed after lamination.

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HOW $7157.24 WAS SAVED ON FIRST RUN

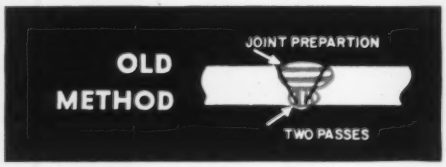
Labor $3,850.50

Material $2,853.74

Power . . . . . $ 453.00

Total $7,157.24

A modest investment of $2450 in a semiautomatic welder brought this firm a 300 per cent return



Cost $9139.30

5560 lb ¼ in. stick electrodes	($0.215/lb)	$1,195.40
8340 lb ¼ in. automatic wire	($0.285/lb)	2,376.90
586 manhours	($8.50/hr)	4,981.00
586 powerhours	($1.00/hr)	586.00

COST CRISIS . . . How To Beat It

New Welder Saves Firm

Need for a better way prompted Denver pipemaker to try semiautomatic welding. Result: From the first production run, a whopping 300 per cent return on its investment

HERE'S the problem: Production people at Thompson Pipe & Steel Co., Denver, felt that their pipe welding methods were inefficient and could be improved.

Industry's acceptance of a new technique (semiautomatic welding) suggested a way out. Some of the results:

- Welds are completed nearly three times as fast as with the old method.
- Joint preparation has been eliminated.
- Joints are smaller—a saving in welding wire.

Product—Thompson makes mild steel pipe 14 to 30 in. in diameter. Metal thickness is 3/16 to 1/4 in.

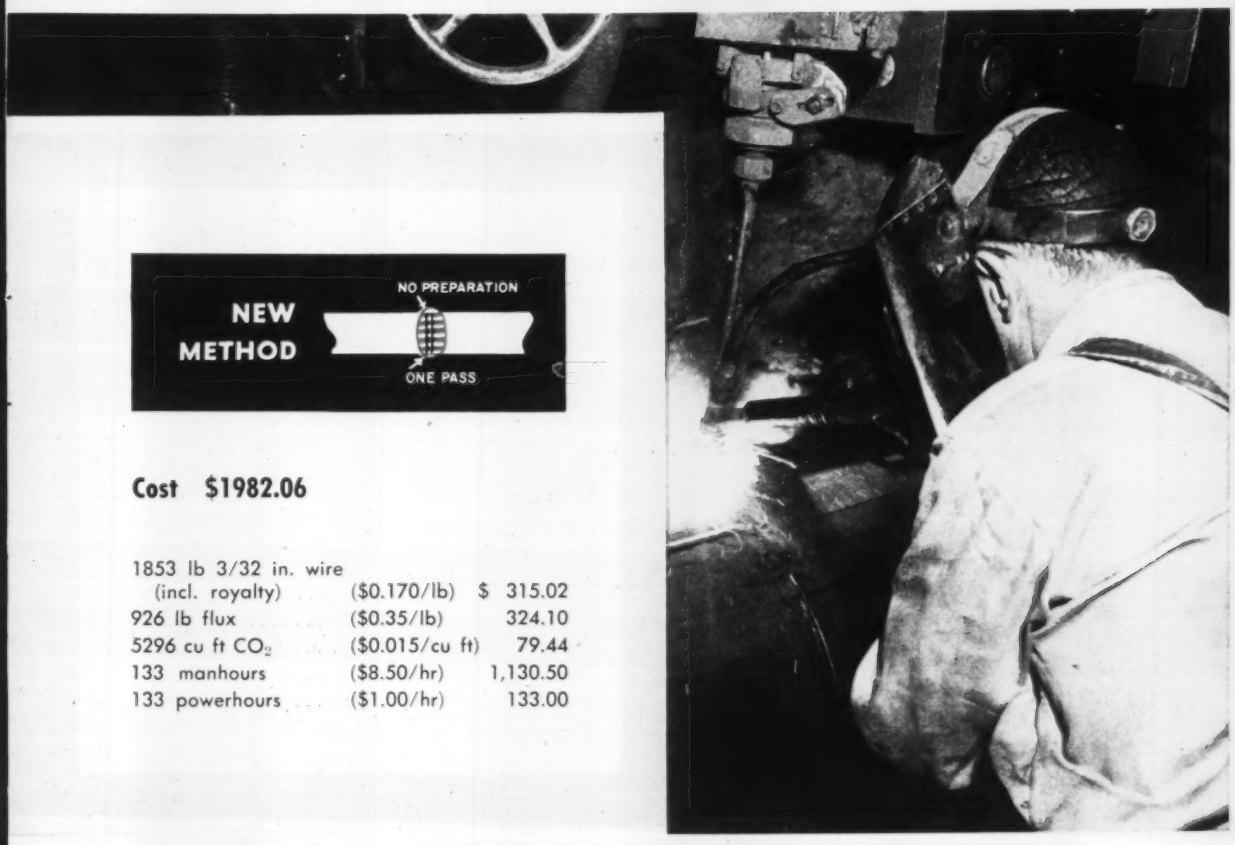
In joining one section to another, the old method made girth welds in two passes—the first with an automatic welder which used a flux coated, wire wound wire; the second manually with stick electrodes.

The first pass lacked proper penetration, and deposits had considerable porosity. Speed of both passes was 19 ipm.

Solution — The semiautomatic welder, called Unionarc, is made by the Linde Co., a division of Union Carbide Corp., New York. It has enough arc force to give complete penetration of the 1/4-in. pipe in one pass, and there is no porosity. Speed is 42 ipm, compared with two passes at 19 ipm—an increase of 342 per cent.

Thompson's first production run of pipe had more than 27,000 ft of girth welds in 24 and 27 in. pipe. (Settings: Wire, 3/32 in.; 420 amperes, 28 volts, direct current reverse polarity.) As a result, Thompson figures it gained a 300 per cent return on its investment on the first production run. It estimates savings in the first year's operation will come to $150,000.

Method—Unionarc uses a contin-



Cost $1982.06

1853 lb 3/32 in. wire (incl. royalty)	($0.170/lb)	$ 315.02
926 lb flux	($0.35/lb)	324.10
5296 cu ft CO_2	($0.015/cu ft)	79.44
133 manhours	($8.50/hr)	1,130.50
133 powerhours	($1.00/hr)	133.00

Welding head is held by this bracket while pipe rotates for girth seam. Combination of carbon dioxide and magnetized flux shields the molten puddle from air contamination

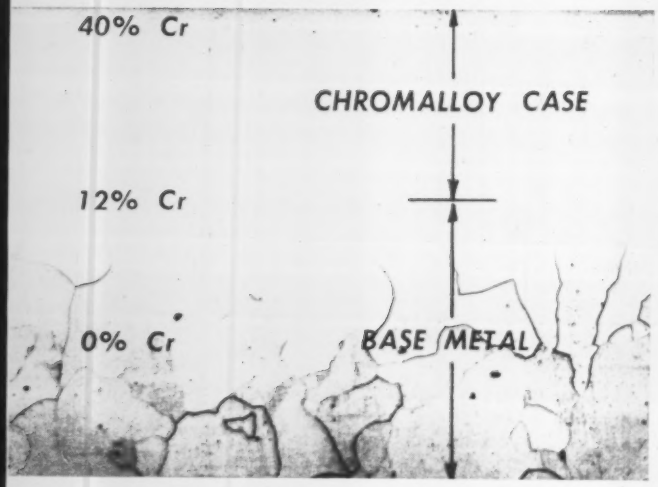
$150,000 Yearly

uously fed wire electrode which is magnetically coated with flux and shielded with carbon dioxide. (The wire is relatively inexpensive.) The machine works in all the welding positions—flat, vertical, and horizontal—and is said to be from three to four times faster than manual, covered electrodes.

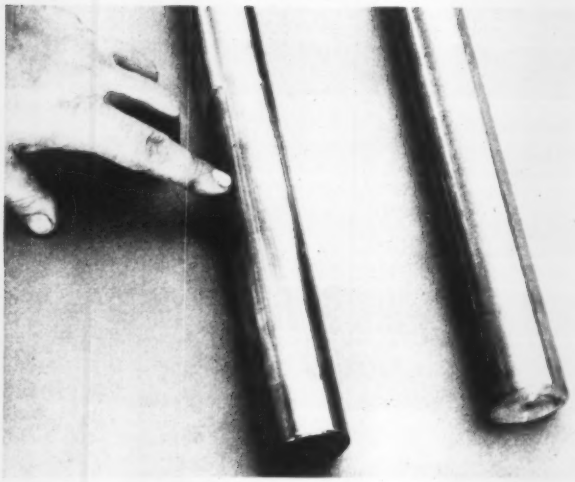
The system operates from any standard direct current power source. Dry flux is kept in a small hopper attached to the stand which holds controls, wire feed, and reel. During welding, flux is fed by magnetized rollers to the stream of carbon dioxide which carries it through a hose to the welding head. When it reaches welding area, flux sticks to the wire and molten metal.

COST CRISIS COMPETITION

This article is part of a campaign to help industry achieve lower unit production costs. The accompanying example and others to follow are samples of what the editors of STEEL are looking for in their nationwide search for companies that have brought about important cost savings through more efficient use of capital equipment. Does your company qualify? If so, enter the Cost Crisis Competition. Write to the Cost Crisis Editor, STEEL, Penton Bldg., Cleveland 13, Ohio, for your awards kit.



Photomicrograph shows penetration of chromium into low carbon steel



Chromallized piston (right) in a vertical pump lasted seven times longer than the alloy previously used (left)

Process Upgrades Steel Parts

HERE'S another method for your cost cutting program: Chromallizing, a process for diffusing chromium into the surface of metal. It offers two big advantages:

- It is frequently possible to select a low cost steel as a base metal, confining the expensive alloying element to the surface where it is needed.
- Chromallized steel can outperform conventional materials in wear and oxidation resistance. Maintenance costs are lowered; repairs are minimized.

Alloy Case Created—In chromallizing (it's a patented process owned by Chromalloy Corp., White Plains, N. Y.), metal parts are packed in a sealed retort with a chromium-containing powder compound. They are heated to an elevated temperature, then slowly cooled in the retort. The composition of the compound, the temperature, and the time can be varied to produce cases of different depths and properties.

When parts of low carbon steel (SAE 1010) are treated, the case consists of an iron-chromium alloy similar to the ferritic stainless steels. The case is ductile and can be bent, formed, and rolled. It has the corrosion and oxidation resistance of the high chromium stainless steels.

When higher carbon steels are chromallized, the case consists of chromium carbides. It is extremely hard; wear and abrasion resistance are similar to tungsten carbide surfaces. Since the base steel becomes annealed during the process, subsequent heat treatment may be necessary; it won't affect the case.

Parts show a slight, but predictable, growth. Since the case is thin (about 0.001 in.), grinding to final dimensions is not practical.

Stainless steels, nickel or cobalt alloys, tungsten, molybdenum, and other metals can be treated to provide protection from oxidation and erosion at temperatures to 3000° F.

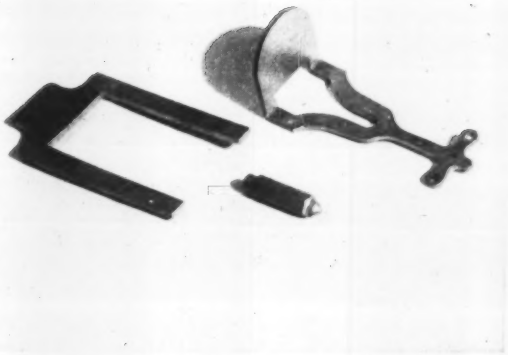
Chromalloy Corp. cites these cases where chromallized steel has brought savings to fabricators:

Resists High Heat — One type electric heating element consists of a Nichrome wire protected by a metal sheath or casing, usually a round or rectangular tube. Sheath temperatures go up to 1500° F. Chromallized mild steel tubing or sheets can be substituted for stainless or high nickel alloys at substantial cost savings.

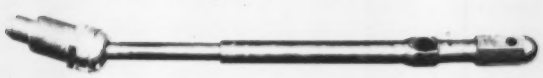
Sparkplug electrodes are made of a high alloy wire to resist oxidation. Ordinary mild steel electrodes that were chromallized have been tested in sparkplugs and so far are operating as well as the alloy types.

Gas turbine vanes and blades require high hot strength and resistance to oxidation and erosion. Certain materials which have good high temperature strength but insufficient oxidation resistance have been treated to protect them at temperatures of about 2000° F. Work is in progress to improve the special alloy cases. It is expected to help raise the temperature limitation in the operation of aircraft gas turbines.

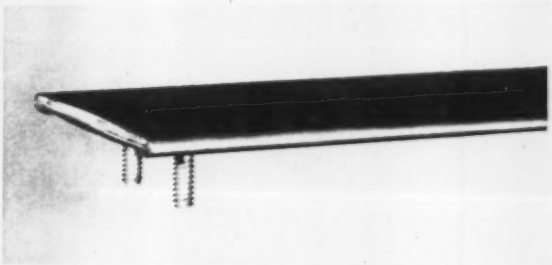
Development work indicates that chromallized exhaust valves may eliminate the need for sodium filled valves in truck engines. (It's necessary to provide greater heat and corrosion resistance at the surface of the alloy.) Three different dif-



Chromallized iron relay parts solved a problem in corrosion resistance and magnetics



Flexible push-pull control for aircraft engine. Chromallized 4130 steel is specified for the telescoping tubes



Heating element with sheath of chromallized metal. Sheath temperatures go up to 1500° F

Diffusing chromium into the surface creates a hard case that resists wear, corrosion, and oxidation. You can frequently select a low cost steel as a base metal

fusion processes for this application are under study.

Resists Wear—A manufacturer of zippers was able to feed 965,000 parts through chromallized locating plates, vs. 279,000 parts with ordinary hardened tool steel plates. Similar results have been obtained with guides and feeds in canmaking machinery. Chromallized forming dies for auto trim lasted 100,000 operations, vs. 3000 for conventional die material.

Stainless steel pistons in a vertical pump, generating pressures up to 2200 psi, were scoring and causing leakage after 600 hours of service. Treated carbon steel pistons lasted seven times as long and were less expensive than the stainless ones.

A flexible cable push-pull control for an aircraft engine contained two telescoping tubes which operated at 1000° F. Type 321 stainless tubes failed by seizing at 300 cycles. Chromallized 4130 steel tubes operated for 100,000 cycles with no failure. They are now specified as standard equipment on the engine.

Resists Corrosion — Automobile exhaust mufflers are made of chromallized low carbon steel in England. They have been so successful that one manufacturer guarantees the part.

A manufacturer of steam traps had complaints that the trap body was eroding in wet steam. He tested bodies machined from Type 410 stainless and found them satisfactory, except for cost. Ordinary steel that had been chromallized was tested and found to be equal in corrosion resistance and cheaper.

An appliance manufacturer had a problem with a solenoid valve. The stem was machined from Type 430 stainless and operated against a rubber seat. Since the stem was operated by a solenoid, it was the armature of a magnetic circuit. The stainless was corrosion resistant in ordinary service, but when the machines were stored for several months, the stems corroded where they were in contact with the seat.

New armatures were made as iron powder sinterings whieh were chromallized and impregnated with a resin to seal the pores underneath the case. They solved the corrosion problem. The valve also operated better because of superior magnetic properties of the iron core. Another saving was realized by replacing a machined part with a metal powder part.

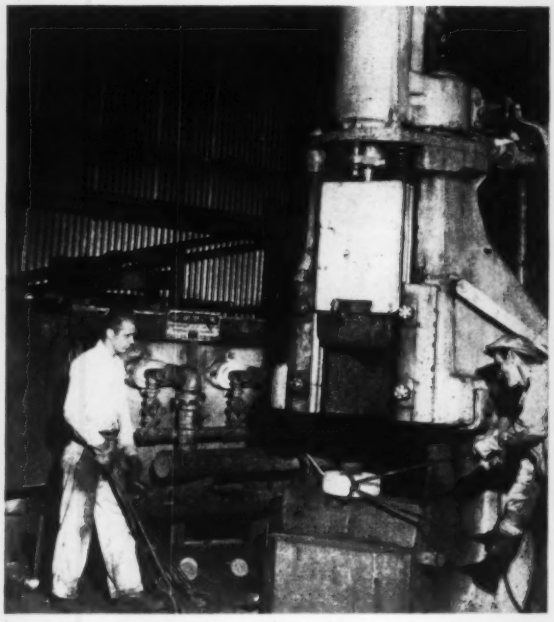
Chromallizing Costs Vary — In general, chromallizing costs are determined by the volume of the part and the quantity to be processed at one time. Other factors are the amount of chromium to be diffused into the steel and the labor required to prepare a run.

In many applications, a chromallized part can favorably compete with one made of stainless. If the part has a high volume-weight ratio, the stainless part may be cheaper. Usually, a large saving can be realized in applications where longer life reduces maintenance and downtime, as in the pump piston.

Generally, chromallizing is more expensive than conventional heat treating methods and simple barrel electroplating. It is less expensive than most hard facing processes.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

Forging a 17-4 PH ring starts with knock-down of a 6 by 6 in. billet 10¼ in. long on a 2000-lb hammer. Furnace has Bloom tempered flame burners to heat billets



Disc is pierced by driving a cold punch through the center

Stainless Forging Takes

Temperatures and heating procedures for 17-4 and 17-7 PH hold the key to high quality. Cutting and handling techniques minimize carburization and splitting

THE STAINLESS steels 17-4 PH and 17-7 PH react differently to heating and hot work. Of the two, 17-4 PH forges, machines, and heat treats more easily. It is also the cheaper of the two materials.

Here are some practices which Armco Steel Corp., Middletown, Ohio, recommends to help you get more out of forging the alloys.

Cites Examples—17-4 PH forgings include ring, drop hammer, open die, closed die, and swaging die types. Sizes vary from 1⅜ in. round to 12 in. square.

Armco finds 2150° F is the best initial forging temperature. (The maximum is 2250° F.)

Charging temperature is not critical on bar stock smaller than 3 in., but don't charge those sizes into furnaces hotter than 2150° F. Furnace temperature at charging is more critical as stock size increases. Thermal shock may cause internal cracks. (See checklist, Page 93).

How To Cool—After forging, air cool simple shapes less than 3 in. thick to 90° F before further processing.

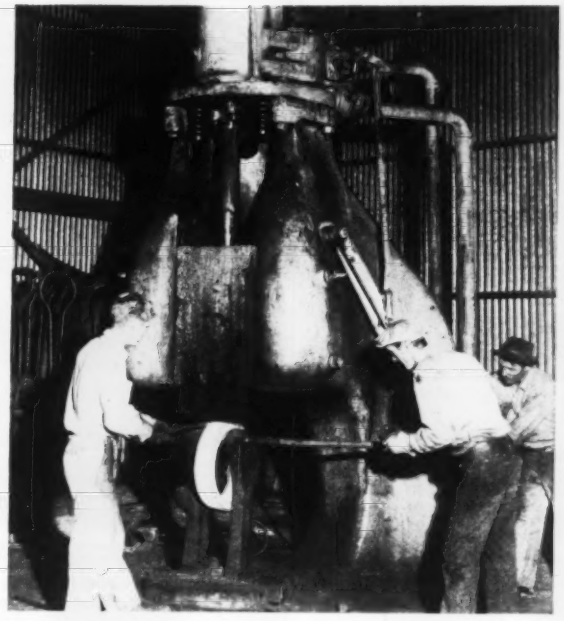
Before cooling intricate shapes less than 3 in. thick, return them to the furnace and equalize between 1900° F and the forging temperature. The same is true for forgings 3 to 6 in. thick. Both are air cooled to 90° F or below in still air. Forgings over 6 in. thick should be equalized the same way but air cooled to 90° F under cover (use light steel sheets).

After forging, equalize simple and intricate sections 3 in. and larger at forging temperatures. That develops uniform temperature throughout the section and avoids cracking during cooling.

To assure good transverse properties, recharge and normalize finished work at forging temperature (2150° F), soaking it from 1 to 2 hours. Follow that by cooling as previously described. When used, it replaces the equalizing treatment. You must anneal in the standard way after normalizing.

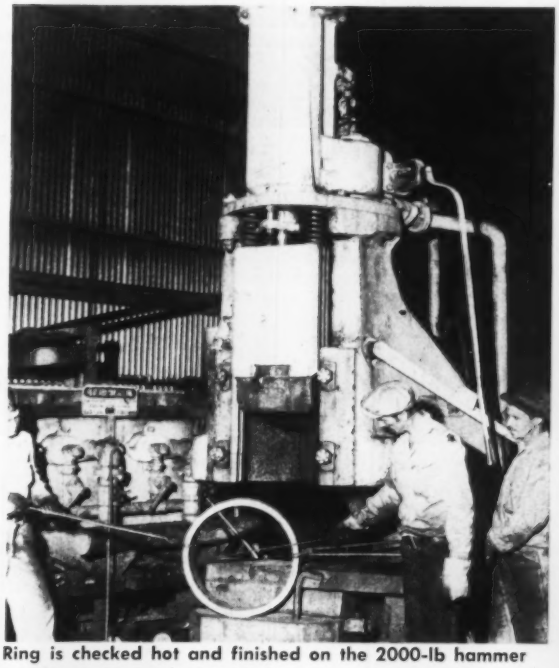
Annealing (Solution Treatment)—First, cool the parts to room temperature. Clean 17-4 PH parts thoroughly. It prevents carburization from carbon-bearing material and promotes a uniform surface condition. (The tables at right give recommended practices.)

Furnace temperature at charging time is important especially for large sections. The same furnaces, controls, and precautions are used to anneal 17-4 PH as for other chro-



and transferred to mandrel operation on a 2500-lb hammer

Precise Control



Ring is checked hot and finished on the 2000-lb hammer

Forging Practice

Stock Thickness	Furnace Temperature (° F) (When charged)
To 3 in.	2150 (max)
3-6 in.	2000 (max)
6-8 in.	1800 (max)
8-10 in.	1600 (max)
10-12 in.	1400 (max)
12 in. and over	1200 (max)

To Heat Cold Steel

To 3 in. . . . . Charge and raise directly to 2150° F. Before working, soak 15 minutes after center of section reaches temperature.

3 in. and up . . . . . Same, but allow ½ hour soak for each inch of thickness (surface to surface) after furnace thermocouple shows 2150° F. Hold 1 hour before working. (Example: A billet 4 in. square requires 3 hours.)

Reheating During Forging

To 3 in. . . . . Recharge and rework when center of section has reached forging temperature. Allow to soak for at least 15 minutes.

3 in. and up . . . . . Same as heating cold steel (above), except allow ¼ hour per inch of stock thickness.

Charging Temperature

Stock Thickness	Temperature (° F)
To 6 in.	1900 max
6-8 in.	1800 max
8-10 in.	1600 max
10-12 in.	1400 max
Over 12 in.	1200 max

Annealing Practice

(Solution Treatment)

Stock Thickness	Procedure
To 3 in.	Hold within 25 degrees of 1900° F for ½ hour, oil quench, and cool to 90° F or lower.
3-6 in.	Same, but air cool to 90° F or lower.
6 in. and over	Same, but air cool under cover to 90° F or lower.

(The ½ hour is for temperature at center of section.)

STAINLESS FORGING . . .

mium-nickel grades. Avoid open annealing in a carburizing atmosphere. Absorbed carbon may change the chemical balance of the surface material and reduce its ability to respond to heat treatment. You can get scale-free annealing in dry hydrogen atmospheres if the dew point is below minus 50° F. Dissociated ammonia is not recommended because nitriding is a hazard.

Controlling 4-in Sizes — Avoid holding, slow cooling, or slow heating them at 1800 to 1850° F—it may change the internal structure. You can prevent microfissures through adequate temperature control and a minimum time in the 1800 to 1850° F range.

Use cold sawing on bars and billets. Hot sawing or an abrasive wheel can produce cracks.

How To Handle 17-7 PH—This grade is not forged as easily as 17-4 PH, yet with proper practice it is being done on a production basis. Such forgings, which are welded to sheet structures fabricated from the same material, are widely used. The assembled piece is heat treated.

Since it is a two-phase alloy (austenite-ferrite), 17-7 PH has pronounced directional properties—it tends to split when forged. You can minimize splitting by working the ends first. Peripheral splitting of upset forgings is minimized by frequent reheating. Then the peripheral surface can be worked lightly.

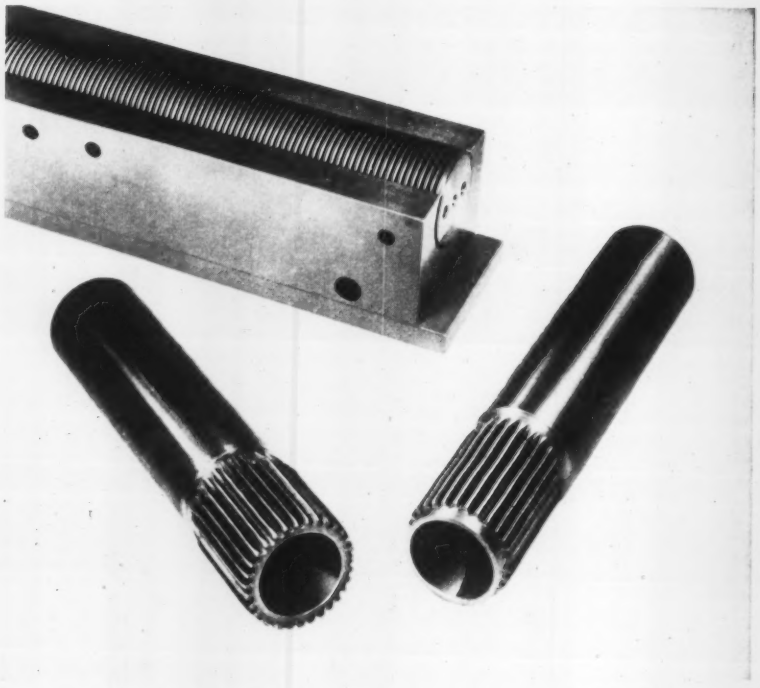
Initial forging temperature is 2000 to 2250° F. Hammer cogging bars or billets is done at 2150 to 2250° F.

To avoid excessive scaling, you may want to use lower temperatures. Your guide is trial and error.

Furnace temperature is not critical—it may be charged into either a hot or cold furnace and air cool.

Annealing Suggestions — Clean 17-7 PH parts thoroughly to prevent carburization and to promote uniform surface conditions. This procedure is recommended: Parts up to 1 in. thick should be held ½ hour at 1900° F and quenched in water. Heavier parts should be held at least an hour. Use the same furnaces, controls, and precautions as those for 17-4 PH.

Unlike 17-4, 17-7 PH can be cut with a hot shear, hot saw, cold saw, abrasive wheel, or a torch. Hot sheared ends are the least susceptible to splitting during forging.



Here are the cylindrical tool and a couple of parts it produced. Cold forming gives strong, wear resistant surfaces. It is said to be cheaper than other methods

Tool Rolls Splines in Tubing

Formerly limited to solid bars, cold forming is being applied to thin walled tubing with success. Distance of spline root from inside diameter can be as little as 0.075 in.

COLD FORMING of gear teeth and splines moved another step ahead recently when Michigan Tool Co., Detroit, found a way to apply its method to tubing.

The secret: A cylindrical forming rack which fits Roto-Flo cold-rolling machines. It can handle relatively thin walled tubing ½ to 2 in. in diameter.

Versatile—The machine will also form splines on solid shafts. Serrations or splines can be up to 12 in. long. On thin walled tubes, the tooth roots can be within 0.075 in. of the inside diameter. Rolling pressures are only 3000 to 4000 lb.

The tubing setup is similar to that for solid shafts. Racks are round, and the forming teeth are all the same size. They are reciprocated over the part—travel is short and fast.

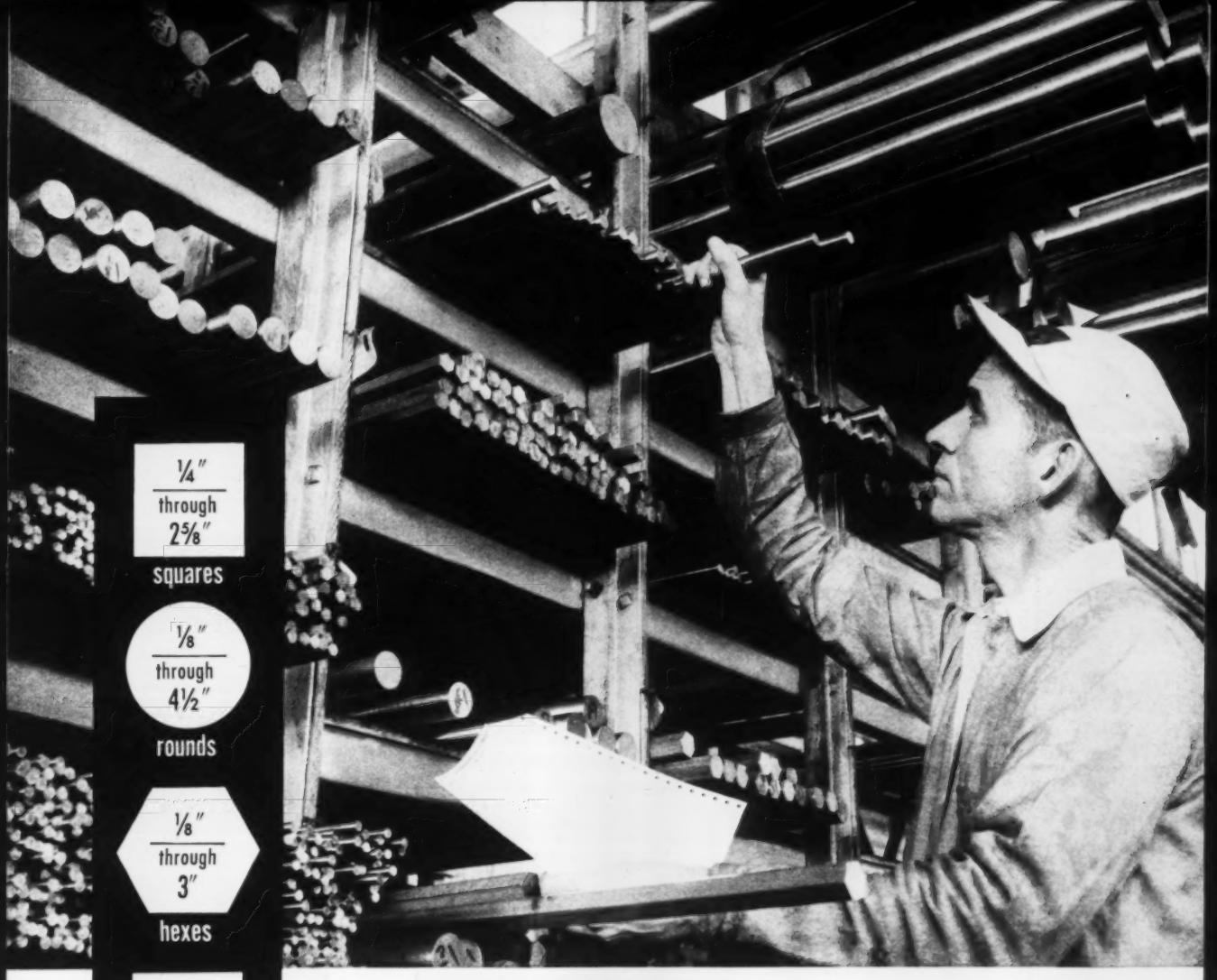
The system generates the same tooth forms which are made by hobs (either 30 or 45 degree pitch angle). Racks follow a straight path while the part is axially fed 1/6 to 1/8 ips.

Splines can be rolled on undercut parts, and racks can be notched so that full depth teeth are formed to within 1/4 in. of a shoulder.

Tool Life—The new round forming rack is made of high alloy steel. As it wears, the rack is rotated in the holder, bringing an unworn portion into use. Indexing permits several settings for each rack.

Tool costs per part are said to be quite low. Other advantages are smaller size and lower tool inventories.

The same rack will produce several sizes of parts if each has the same pitch diameter.



Steel Service Centers are served better from J & L's Master Stock of Stainless Steel

To better serve its warehouse customers, J & L's Stainless Steel Division in Detroit master stocks hundreds of tons of finished stainless steel bar and wire for prompt delivery. This stainless steel bar and wire stock is available in sizes and shapes to meet customer requirements and specifications.

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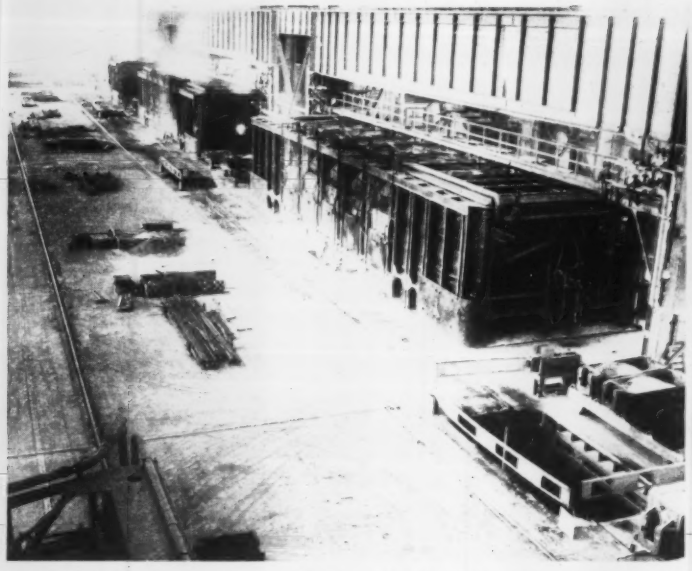
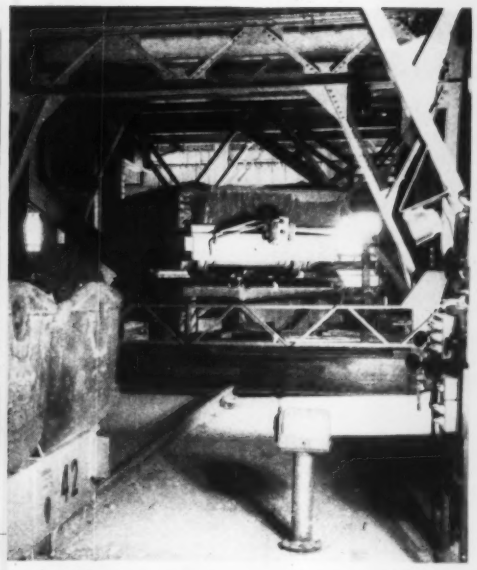




Middletown—Floor of No. 2 open hearth shop, showing elevator stations between furnaces. Right, loaded elevator turns as its rises from ground floor to the charging floor

Three Ways To Handle Scrap

Armco Steel Corp. plants have approached this problem with considerable imagination. An unusual process at the Butler, Pa., Works eliminates the buggy train

CHARGING TIME, critical bottleneck of open hearth operation, has been attacked from many angles: Bigger charging boxes, bigger furnace doors, carefully organized buggy drags.

More radical approaches are favored by Armco Steel Corp.: The open hearths in the No. 2 shops at Middletown, Ohio, use charging elevators. At the Butler Works, Butler, Pa., the unconventional Calderon Super Charger is being tried. At the Ashland Works, Ashland, Ky., an endless chain and gravity have been put to work to speed buggy movement.

Middletown—The charging buggy elevator is a unique Armco development. Loaded buggies can be brought into the open hearth shop at ground level, raised to the charging floor, and returned empty to ground level without disturbing any furnace except that being charged.

The system was installed in the No. 2 shop at Middletown in 1950, when that shop was new. It proved so effective that when the shop was enlarged recently from three to six furnaces, elevators were included in the expansion plans.

No Congestion—Tracks enter the ground floor from the stockyard at right angles to the furnaces. At this level, the elevator platforms are aligned with the tracks so that the buggies can move directly onto them. As the platforms rise to the charging floor, they make a quarter turn so that the buggies roll off onto the charging track parallel to the furnace front.

Interference on the charging floor has been virtually eliminated, for each furnace can be charged and repaired without blocking others, even momentarily. Charging is less dependent on the stockyard (which no longer has to be an integral part of the shop building). Charging control is simplified and empty buggies can be returned promptly to the stockyard.

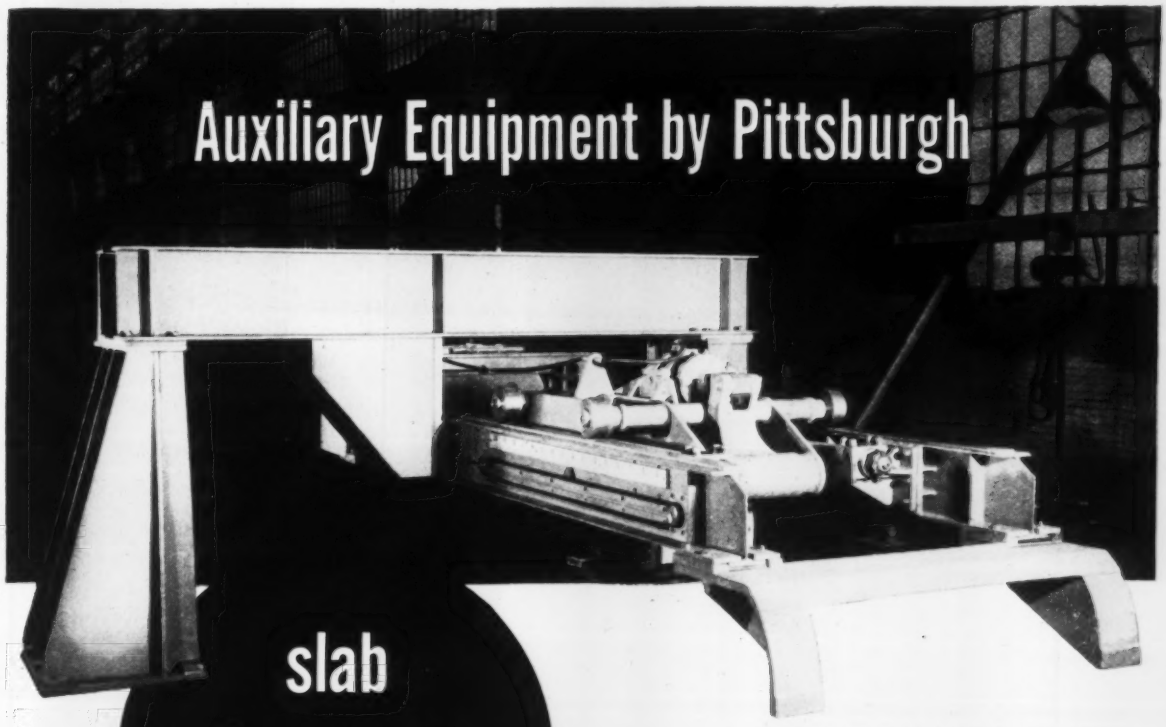
Money Back—Original estimates of production benefits from the system (a decrease of 15 to 20 per cent in charging time) have been exceeded. Maintenance costs on the hoists have been practically nil. The potential hazard of running buggies into an open elevator hole has not proved serious.

The entire shop building can be of lighter, less costly construction since the charging floor does not have to support the weight of a locomotive and long drags of buggies. The system imposes no limit on the number of furnaces that can be built in a row.

However, the elevators would be difficult to adapt to an existing plant because of the space required for the track system between the furnace building and the stockyard.

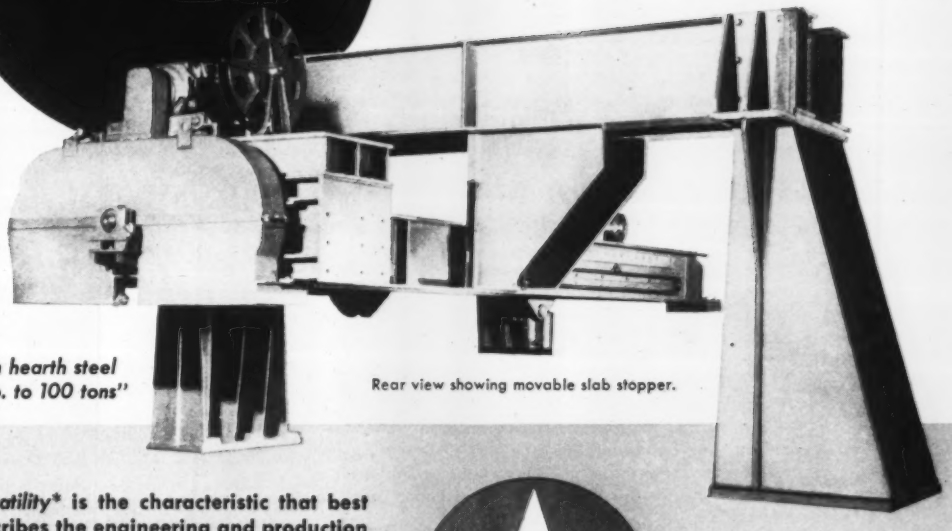
Butler — Armco's smallest open hearth plant (annual capacity 473,000 ingot tons) was chosen for the first full-scale trial of a process pro-

Auxiliary Equipment by Pittsburgh



slab shear gage

Front end of gage for attachment to shear.



Rear view showing movable slab stopper.

"Electric and open hearth steel castings from 1 lb. to 100 tons"

Versatility* **is the characteristic that best describes the engineering and production departments of our Company.**

This Slab Shear Gage is typical of the many items of auxiliary equipment successfully designed and produced by our plant for the metal working industry. Next time you need primary or auxiliary mill equipment, contact Pittsburgh.

**According to Webster:*
"esp. ability along many lines of effort."

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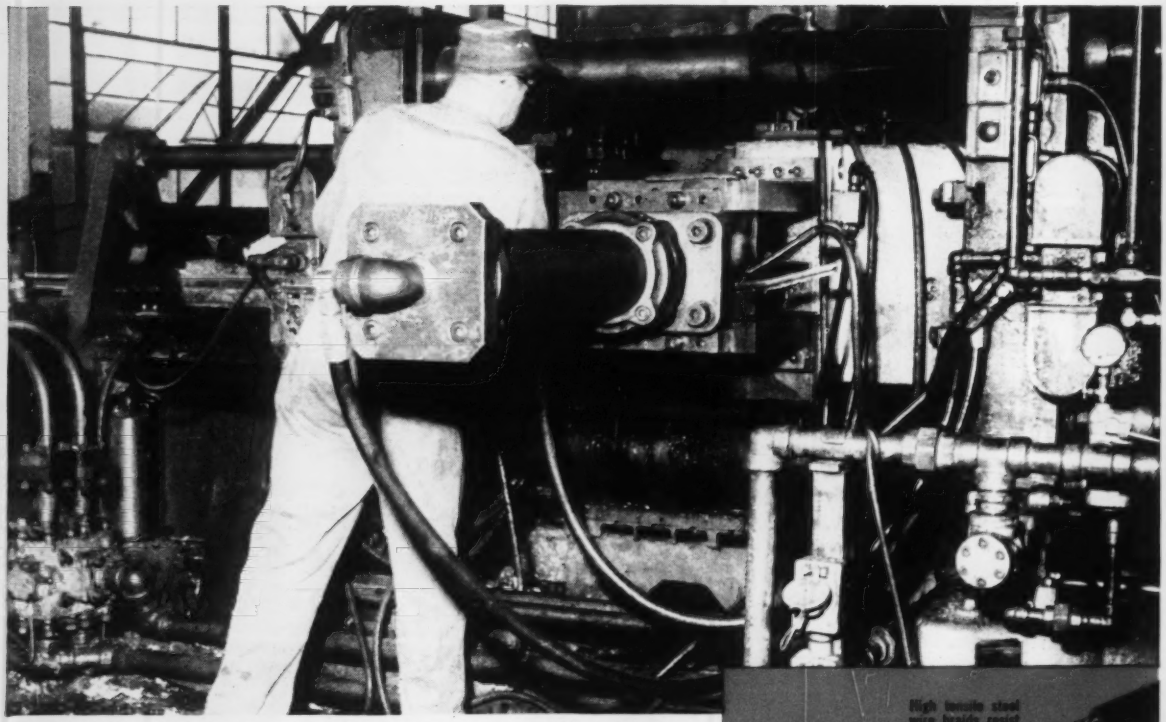


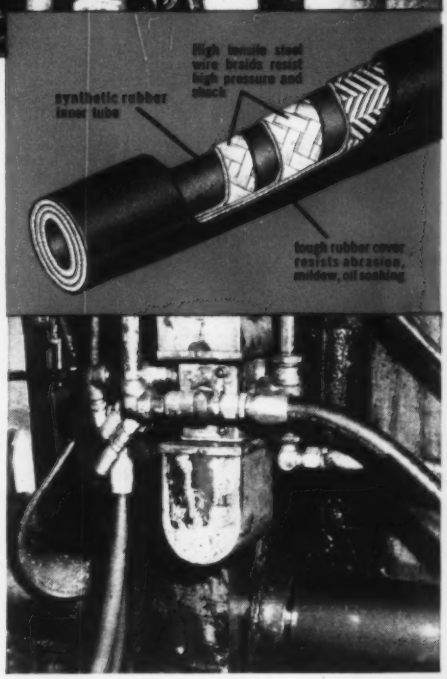
This die-casting machine handles 25-30 lbs. of metal per shot and up to 50 shots per hour.

Aeroquip Hose Lines Withstand Heat, Soaking, Shock and Abrasion On 1000-Ton Die Casting Machines

Basic Aluminum Castings Company of Cleveland, Ohio, Reports No Hose Failures With Aeroquip Hose and Fittings

Eight different makes of die-casting equipment—but only Aeroquip Hose Lines—are used at Basic Aluminum Castings Company. Dependable operation for more than four years has proved the reliability of Aeroquip 1509 Hose and Reusable Fittings. Used on high pressure hydraulic lines, this hose is exposed to high surge pressures, ambient heat, abrasion, external water and oil 18 to 24 hours daily.

Aeroquip offers hose types for pressures up to 5000 psi. compatible with all kinds of hydraulic fluids: Aeroquip 1503, 1508, and 1509 Hoses for petroleum-base hydraulic fluids and for water-base fire-resistant hydraulic fluids; Aeroquip 1532, 1546, and 2756 Hoses for fire-resistant phosphate-ester base hydraulic fluids. Call the Aeroquip distributor listed in your Yellow Page Phone Book, or write us for complete information.


High tensile steel wire braids resist high pressure and shock
synthetic rubber inner tube
tough rubber cover resists abrasion, mildew, oil soaking

These Aeroquip 1509 Hose Lines are under a normal operating pressure of 1500 psi., but withstand unusual surge pressures and shock on locking of the dies.

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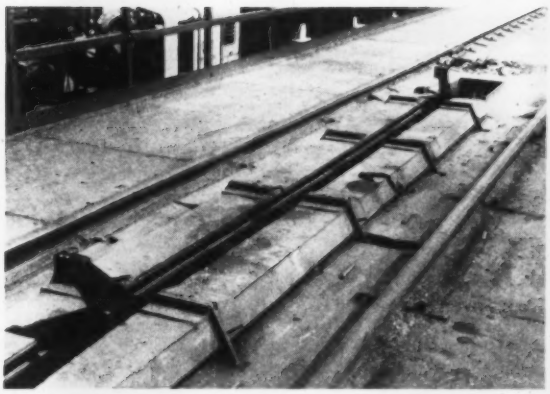
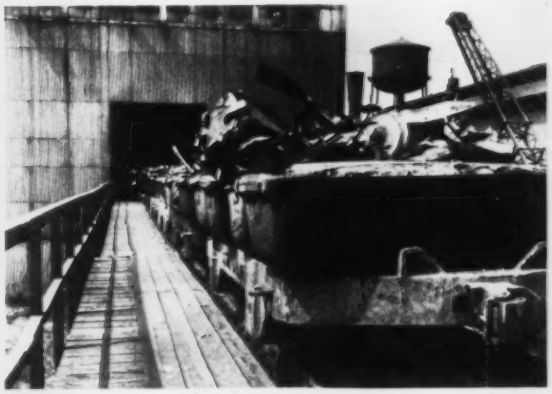
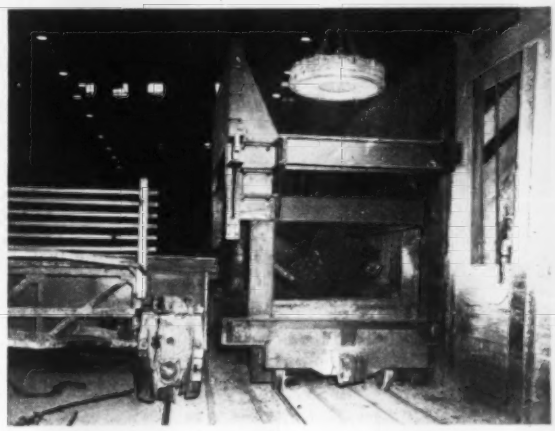
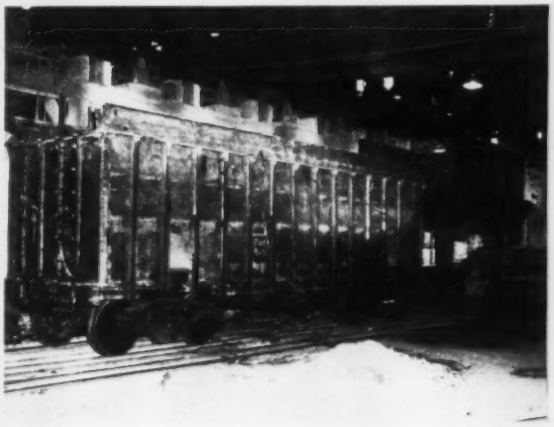




Ashland—Drag system (dogs on an endless chain) moves scrap buggies by pushing on their axles. Right, scrap buggy drag propelled by chain moves into open hearth shop





Butler—Overhead crane transfers a load of scrap into the Calderon Super Charger hopper. Right, high side gondola car loaded with scrap follows behind the charger

PROGRESS . . .

posed a number of years ago—the Calderon Super Charger.

For the usual string of eight scrap buggies, the Calderon system substitutes a single three-pan buggy surmounted by a hopper, and a gondola car loaded with bulk scrap. A magnet lifts scrap from the gondola and dumps it in the hopper. It falls through a bottom slot into the charging pans below. Most of it falls into the central pan.

When a pan is full, it is picked up by the peel of the charging machine and moved into the furnace in normal fashion. After dumping, the charging machine returns the pan under the hopper for a refill.

Advantages—Butler is a cold metal shop, which emphasizes the need for getting scrap into the furnace in a hurry. The Calderon method has shaved 1 hour off the former 6-hour average charging time, and Armco expects refinements will cut off another hour.

Congestion on the charging floor is relieved because the hopper buggy with its companion gondola of scrap takes up only 45 ft of track space. This makes it possible to charge the end door of a furnace without blocking the neighboring furnace. There's also less spillage on the floor than with conventional charging.

Refinements—Loading the gondolas in the stockyard takes 15 per cent less time than loading individual scrap pans. However, a typical charge takes three gondolas, leading to some shifting on the charging floor.

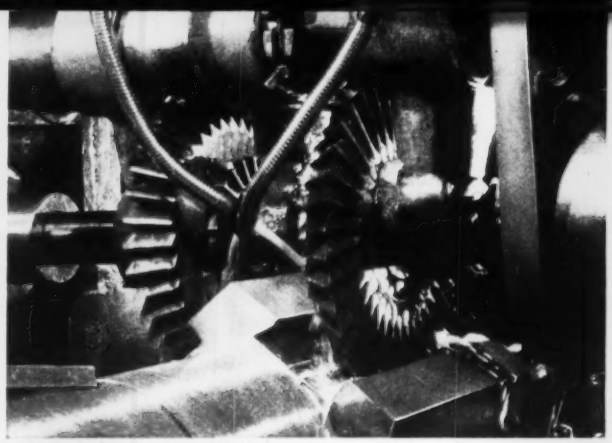
The ideal place for the method would be an integrated shop in which one carload of scrap would suffice for a charge. The scrap car and hopper buggy could then be developed as a single unit with automatic feed into the charging pans. But even in its present prototype state, the Calderon charger appears capable of boosting steel production by 3 tons an hour.

Ashland—In contrast to such developments, scrap movement at Ashland seems prosaic, but improvements there have a direct effect on the high cost of handling. Elevation of the Ashland charging floor requires that buggy trains be pushed up a considerable grade. That formerly was a job for a yard locomotive.

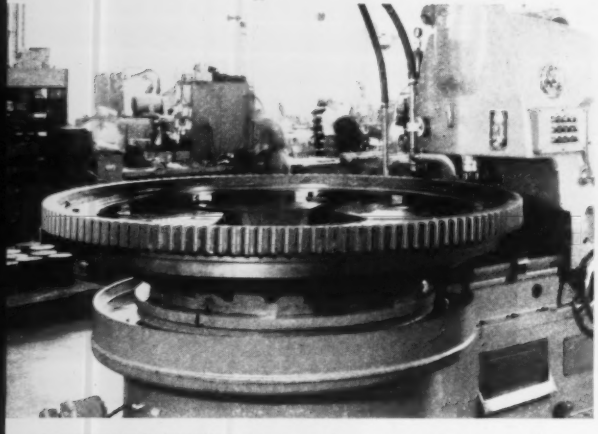
The locomotive can now be employed more profitably because it only brings the buggies to a point at the bottom of the ramp track into the shop. Here an endless chain takes over. Dogs on the chain engage the buggy axles and move the buggies into the shop to a point where the charging crane can take over as prime mover.

Buggies released from the shop roll down the ramp track by gravity, and are slowed by a car retarder. The locomotive picks them up at the bottom of the ramp and returns them to the stockyard.

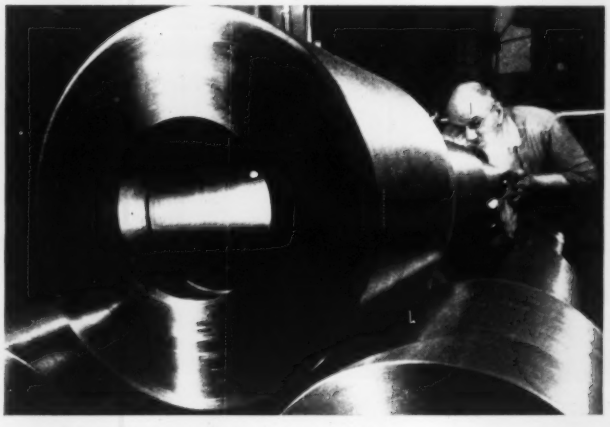
SAVES $150 PER GEAR—In cutting a double-web design fabricated gear on a gear generator, tool cost formerly averaged $180 per gear. By switching to ALCO Hi-Qua-Led Steel with its lower friction component, tool wear is reduced, and manufacturer reports savings of approximately $150 per gear.



MILLING TIME DOWN 71%—Hi-Qua-Led Steel open-die forgings enabled a machine tool builder to reduce time for straddle-mill dovetailing of pentagon shape by 71%. Overall time for piece, including milling, turning and trepanning, is cut 33%, and a significant saving in tools is also noted.



IMPROVED FINISH—A manufacturer reports a much smoother gear finish with ALCO Hi-Qua-Led Steel. There is a complete lack of burrs which formerly required extensive hand filing to remove. In addition, time for this cutting operation on a Fellows gear shaper is reduced 47%, and tool wear is down 20%.

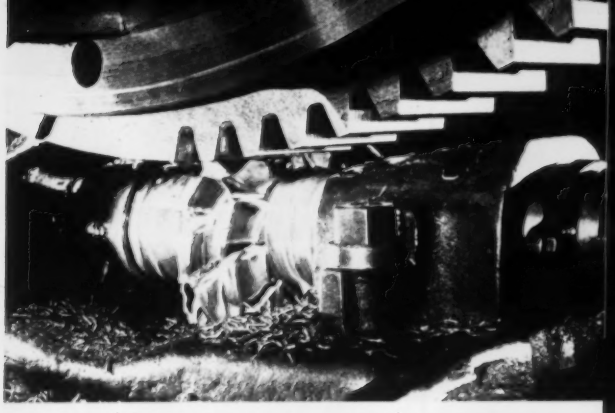


700% INCREASE IN TOOL LIFE—In trepanning a 4 in. diameter hole 42½ in. long with a Warner & Swasey lathe, tool life averaged one piece per tool. With Hi-Qua-Led, 8 pieces are now obtained with the same tool. Manufacturer reports that Hi-Qua-Led Steel also provides much better chip formation.

EASY-MACHINING HI-QUA-LED STEEL* FORGINGS GIVE INDUSTRY NEW OPPORTUNITY FOR PROFIT

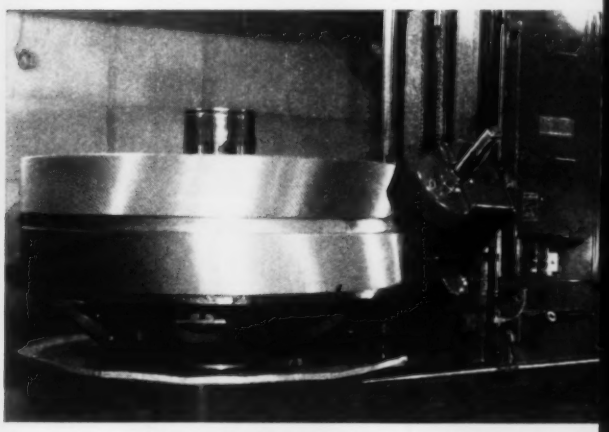
* **HI-QUA-LED STEEL**—ALCO's registered trademark for its new process leaded-steel forgings that are making outstanding reductions in tool wear, machining time and production costs.

TOOL DOES 3 TIMES THE WORK—With Hi-Qua-Led Steel, a King boring mill operation that once required 3.4 hours is off the machine in 43 minutes. Through the lower frictional properties of Hi-Qua-Led Steel, the manufacturer obtains 10 pieces per tool grind as compared to 3 pieces obtainable with non-leaded steel.



8-HOUR JOB DONE IN 3—Another manufacturer reports that roughing and finishing a gear required a total of 8 hours and 8 minutes on his gear cutter. With freer-machining Hi-Qua-Led Steel and the increased speeds and feeds it permits, the job is now completed in just 3 hours and 10 minutes.

FASTER SPEEDS, NORMAL TOOL WEAR—A gear manufacturer using a Fellows gear cutter was able to increase rough-cut speed 37% and finish-cut speed 111% with Hi-Qua-Led Steel. Smoother operation is noted, and the tremendous reduction in machine time is accomplished with only normal wear to cutter.



SAVES FULL WORK WEEK—Using gear blanks of ordinary steel, roughing and finishing on a Gould and Eberhardt machine previously required 65.1 hours. The improved machining qualities of Hi-Qua-Led Steel have speeded up gear production and the job is now completed in 24.9 hours, saving a 40-hour work week.

The easy machinability of ALCO's Hi-Qua-Led Steel® forgings is setting new production records and boosting profit throughout industry. While maintaining all the physical characteristics of regular steel in any AISI grade, forgings of Hi-Qua-Led Steel, ALCO's special process leaded steel, provide the extra benefits of greatly reduced machine time, longer tool life and improved surface finish. In addition, the reduced friction component of Hi-Qua-Led Steel forgings assures much closer tolerances.

By switching to ALCO's Hi-Qua-Led Steel forgings in your operation, you can cut your machining costs drastically. Along with this reduction in costs, Hi-Qua-Led Steel forgings will provide the same service in your end product as you obtain with regular forgings.

ALCO specialists are available to show you—on your own machines, in your own plant—how Hi-Qua-Led Steel forgings will boost your profit. Forgings are available in seamless rolled circular shapes from 18 to 145 in. OD, in open-die shapes from 1,000 to 30,000 lb and 40 ft long, and in mandrelled seamless circular shapes up to 60 in. wide. Contact the ALCO sales office nearest you for complete details. For a booklet containing technical information on Hi-Qua-Led Steel forgings, write ALCO Products, Inc., Dept. 153, Schenectady 5, New York.

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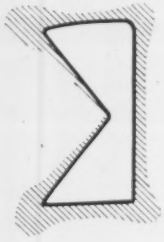
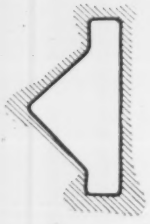
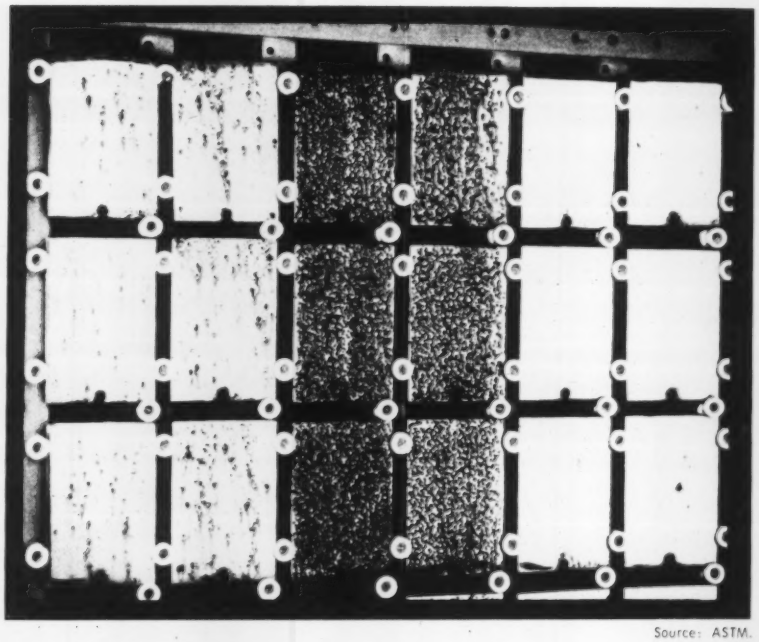


RIGHT



Correct design, says D. M. Bigge, Chrysler Corp., Detroit, saves plating costs. Average thickness of the plating on example above is nine times minimum thickness at corners; after redesign, average is only 5.5 greater than minimum



Source: ASTM.

Second column from the right is evidence that a double coating of buffed dull nickel stands up better than copper-nickel combinations. (All samples have a chrome coating 0.01 mil thick.) Exposure: Three years at Kure Beach, N. C.

WRONG

RIGHT

When you design a decorative part, says Mr. Bigge, avoid excessively deep valleys like those in the example above. Average plating thickness is 6.5 times the minimum; average of redesign (below) is only twice the minimum

Platers Seek Better Tests

With the nickel shortage out of the way, decorative platers are taking a closer look at specifications, standards, and trying new and faster ways to check quality

SALT spray tests are like the weather: "Everyone talks about them, but no one ever does anything about them," bemoans Dr. William Blum, U. S. Bureau of Standards. His impatience points up a long time need of decorative platers: A high speed method of checking plating quality that will simulate service.

Help may be on the way: People at the SAE's annual meeting in Detroit heard more about two tests which may be the break they are looking for. One is an acetic acid modification of the salt spray; the other, called Corrodkote, works with a paste and a humid atmosphere. The American Electroplaters Society is completing its evaluation of them. Its goal: Reduction of testing time from more than a year to two days.

Puzzler—You can't improve plating economically until you have a better way of reproducing service corrosion. Outdoor exposure at seashores, says W. L. Pinner, Houdaille Industries Inc., Buffalo, is not as good a yardstick as a Detroit winter.

Corrosion Causes—Airborne particles of metals and their compounds are the bad actors, says D. M. Bigge, Chrysler Corp., Detroit. They and pores in the original plating are the reasons behind failures in industrial environments.

Extensive tests of 1957 cars showed that the plating on zinc parts doesn't stand up as well as that on steel. It points up the need

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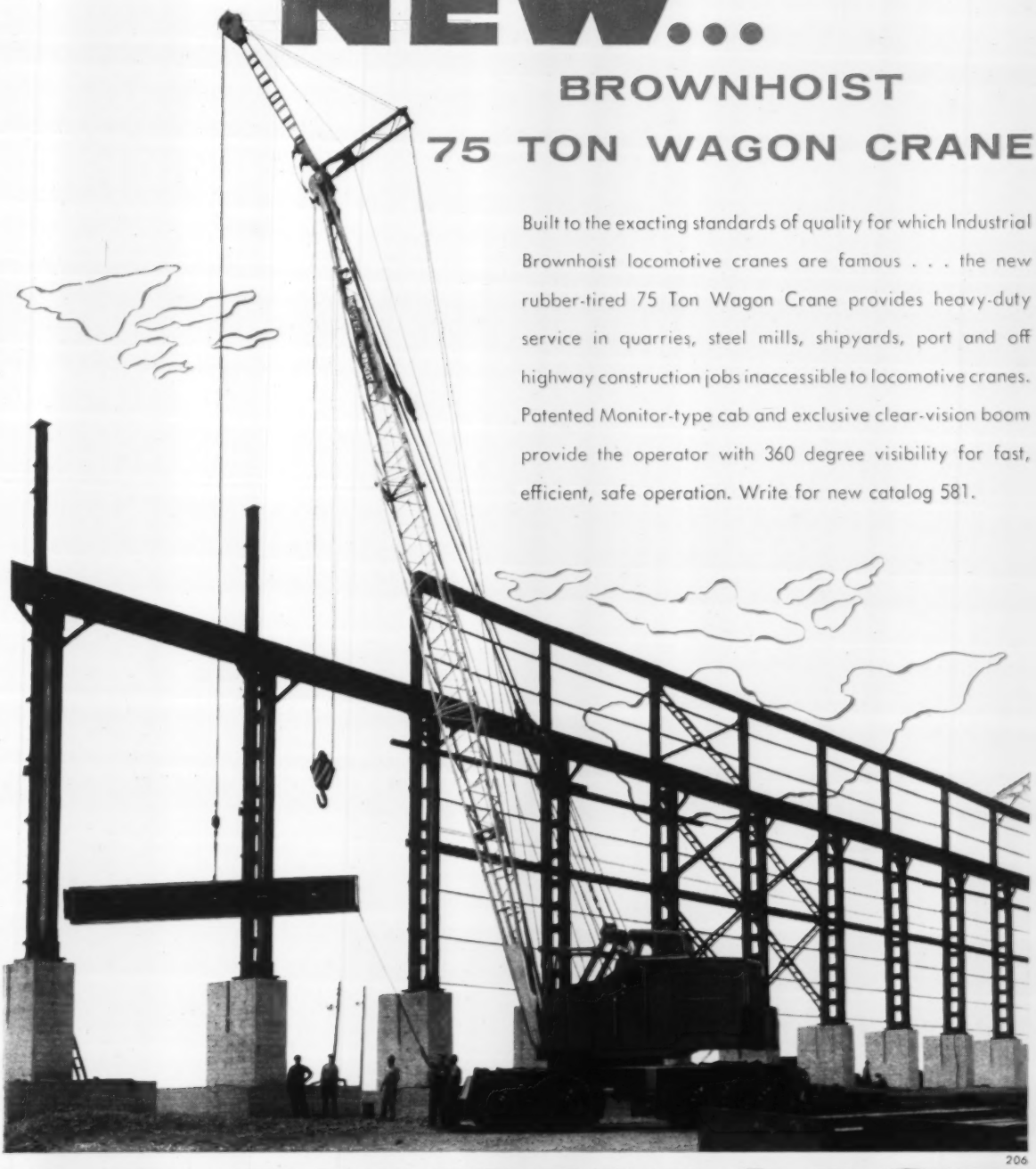
75 TON WAGON CRANE

Built to the exacting standards of quality for which Industrial Brownhoist locomotive cranes are famous . . . the new rubber-tired 75 Ton Wagon Crane provides heavy-duty service in quarries, steel mills, shipyards, port and off highway construction jobs inaccessible to locomotive cranes. Patented Monitor-type cab and exclusive clear-vision boom provide the operator with 360 degree visibility for fast, efficient, safe operation. Write for new catalog 581.



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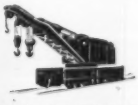
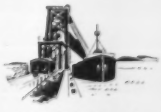
BROWNHOIST

CLAMSHELL BUCKET



250 TON WRECKING CRANE

COAL-ORE BRIDGE



CAR DUMPER

LOCOMOTIVE CRANE

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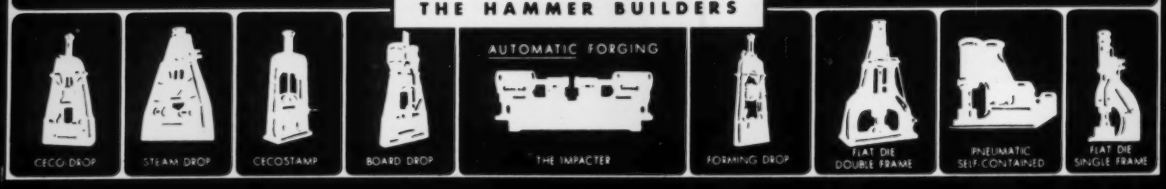
PRECISION DROP FORGINGS ARE PRODUCED CONTINUOUSLY AND AUTOMATICALLY

TODAY new principles, not unlike those which have revolutionized other segments of industry, have been applied by Chambersburg engineers to the forging process. The result is an entirely new concept of that process, pointing the way to greater productivity, reductions in unit cost, uniformity of product and assuring safer, cleaner working conditions. ● Automatic forging equipment, designed and built by Chambersburg, is at work today in a number of shops. ● Motion picture studies of these installations are available for individual executive or group showings. ● Let us assist you in your forging plans for tomorrow. A conference may be arranged through the Chambersburg representative in your area, or, if you wish, write or phone us at Chambersburg Engineering Co., Chambersburg, Pa.

CHAMBERSBURG

THE HAMMER BUILDERS



PLATERS . . .
for better specifications.

Automen and platers discount unusual causes like corrosive atmospheres (those near chemical plants or mine entrances) and calcium chloride on roads. To withstand such attacks, plating systems would have to undergo expensive revision.

Production Variables — Plating thickness gets a lot of attention from standardmen. They also list these factors which affect quality:

1. Ductility of the coating.
2. Adhesion to the basis metal.
3. Adhesion of one layer to another.
4. Solution contaminants.
5. Inadequate metal preparation.

Purchasing Headache — Not all platers can meet specifications, says Mr. Bigge. Reasons: Either equipment or lack of knowhow.

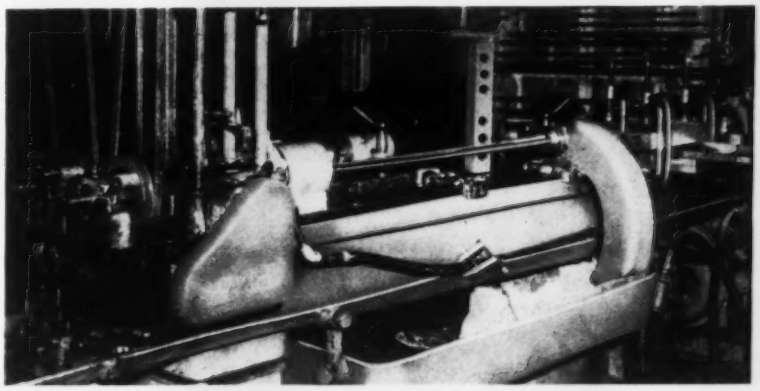
You can minimize some of the problems by agreeing with suppliers on check points for plating thickness. It can save costs on complex parts since some areas are practically impossible to bring to minimum thickness without grossly overplating less important areas. You may also be able to retain one-piece parts instead of redesigning them as several pieces.

Progress — Nickel shortages can no longer be blamed. C. H. Sample, International Nickel Co., New York, has several suggestions for improving plating performance. The double-layer-of-nickel method owes its success to a lack of initial porosity. Prompted by the increasing interest in the approach, the American Society for Testing Materials is preparing a Recommended Practice for its members.

Comparing equal thicknesses of buffed dull nickel with bright nickel, Inco says its tests show that buffed dull nickel has greater durability. Increasing the thickness of bright nickel or overlaying it with chrome improves durability, but results are still inferior to those of dull nickel.

Reason — Why should chrome plating bright nickel decrease protective value when it improves dull nickel resistance?

Mr. Sample suggests that hydrogen embrittlement is causing the trouble. Since steels and Monels crack in the presence of hydrogen, he suspects that highly stressed bright nickel coatings crack for the same reasons.



Gun drill setup at Hamden Deep Hole Drilling Co. shows essentials for accurate work: Machinery for rotating drill, bushing for starting drill, firm fixturing of workpiece, system for coolant flow and chip removal

Deep Holes Drilled Easily

The job called for drilling two holes 35½ in. deep in a shaft. They had to be parallel to each other and the axis of the shaft within 0.020 in. Finish was important

GUN DRILLING turned what may have been a costly and time-consuming operation into a comparatively simple production step at Snow-Nabstedt Gear Corp., Hamden, Conn., when the firm designed a special shaft for a line of hydraulically actuated marine gears.

Shafts are required to deliver a flow of oil to actuate either of two clutches and to withstand operating pressures of 50 to 200 psi while operating a pump. To transmit power from the engine flywheel at one end to a pump at the opposite end, the shaft had to be over 3 ft long. To rotate independently of, yet within, a hollow main driveshaft, the pumpshaft had to be under 2 in. in diameter.

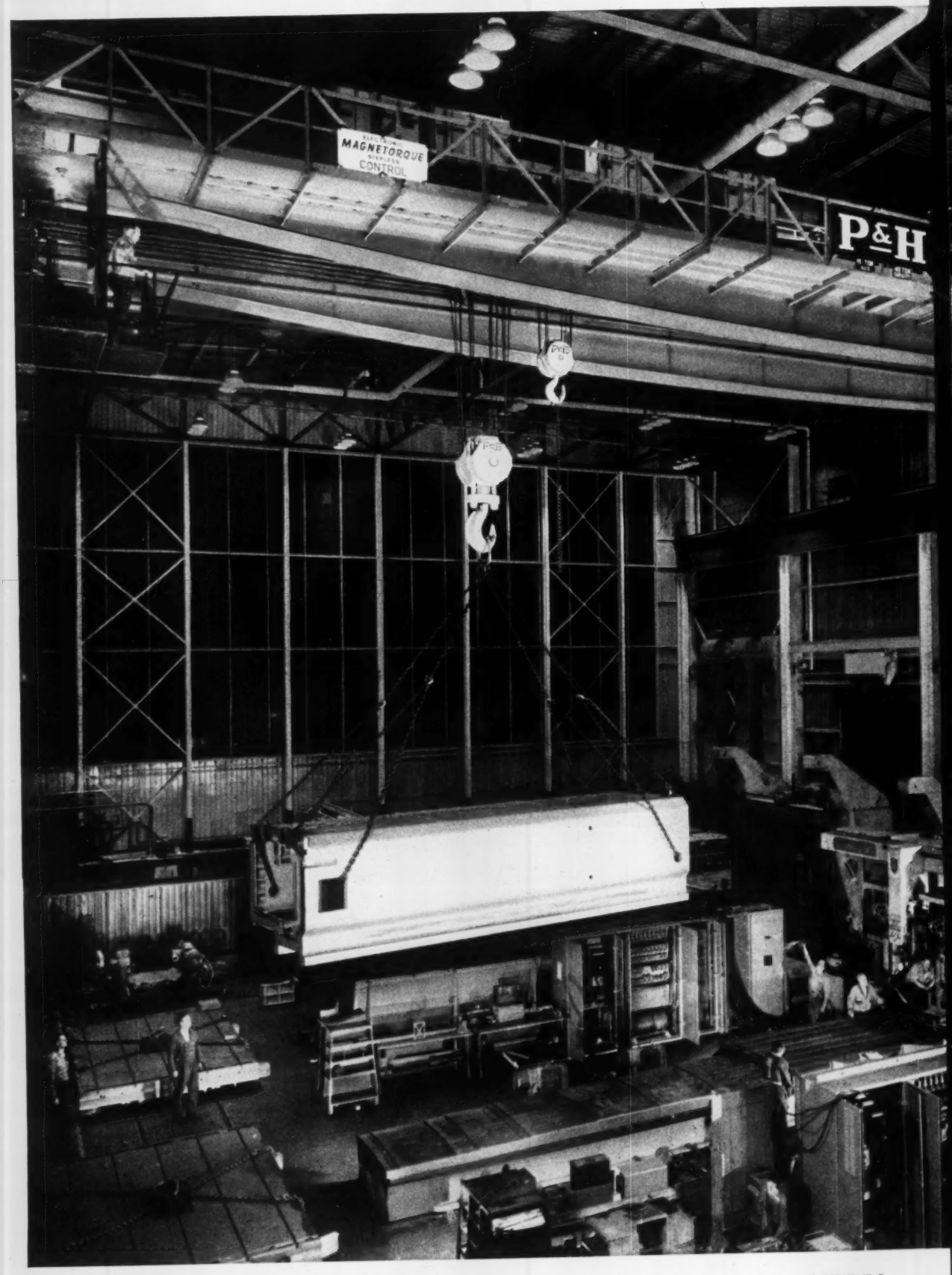
There had to be two ½-in. parallel holes almost the full length of the shaft to deliver oil under pressure from the pump and control valve to either of two hydraulic clutches at the opposite end of the gear.

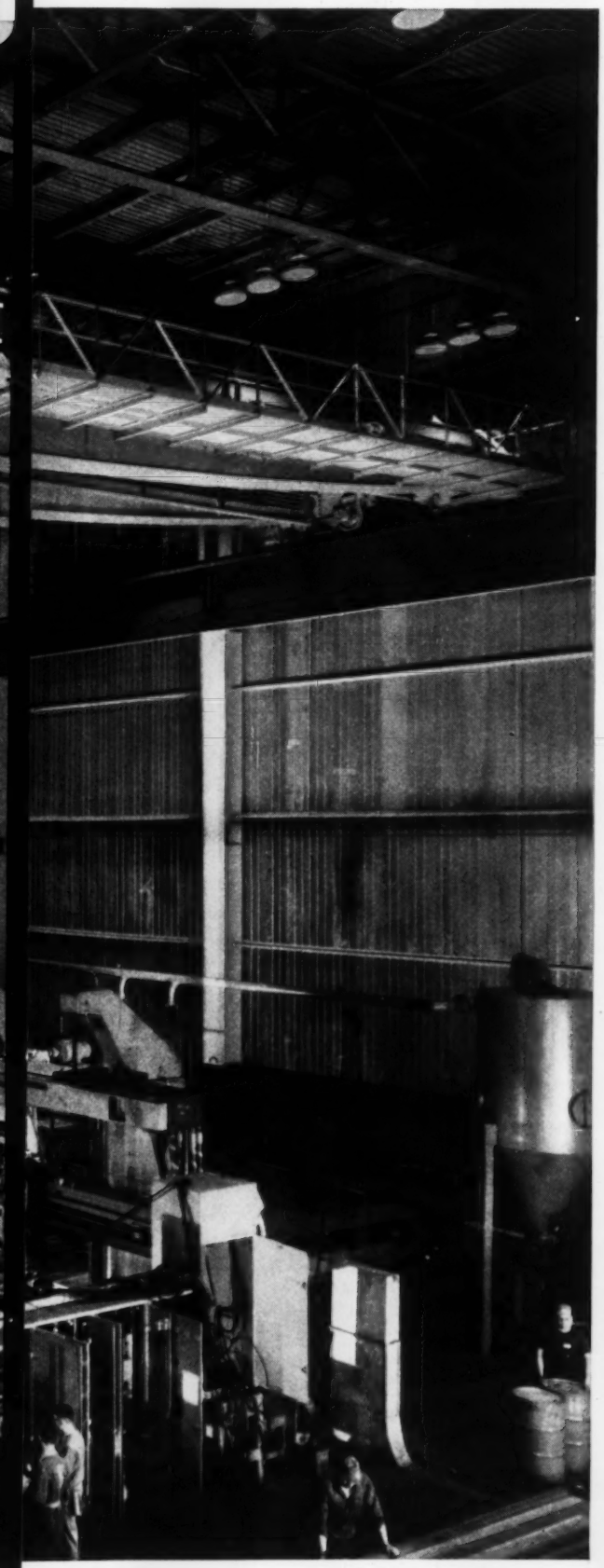
Specialty Shop Did Job — The company cut its cold-rolled steel shafts to 36½-in. lengths and 1¾-in. diameters. Having no gun drilling facilities at hand, Snow-Nabstedt sent the shafts to Hamden Deep Hole Drilling Co., Hamden, Conn.

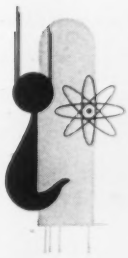
It was a comparatively simple operation for the shop to drill two ½-in. holes, 35½ in. deep, 11/16 in. apart. The parallelism of the holes to each other and to the axis of the shaft was within 0.020 in. Hole size was a constant 0.500 in., and finish within the required 125 rms.

Accurate clamping to the fixture assured alignment. Locating in the fixture was done by using scratch lines through the centers of the workpiece and the holes. They acted as an index and a locator for clamping before drilling. Drills used were made by Eldorado Tool & Mfg. Corp., Milford, Conn.

Savings in both time and cost were reported as substantial, even after deducting the cost of shipping, handling, and turning the job over to a contract shop.


MAGNETORQUE
CONTROL
P&H





It's the CONTROL that determines whether your crane is modern!

...and P&H Electronic "Stepless" Control is the newest development in overhead crane controls. It's a remarkable crane control that provides smoother operation and more precise speed regulation. Operators can select exactly the *right* speed for any lifting and transporting movement, without being limited to "fixed" speeds.

You get a maintenance bonus in P&H Electronic Control, too. It's far simpler than previous crane controls, with fewer wearing parts to replace... or keep in inventory! The same control unit fits any size crane, and can be applied to modernize A-C cranes of *any* make.

You cannot afford to pass up this major improvement without a careful look. Be sure that P&H Electronic "Stepless" Control is included in your next crane inquiry. Dept. 125E, Harnischfeger Corp., Milwaukee 46, Wisconsin.

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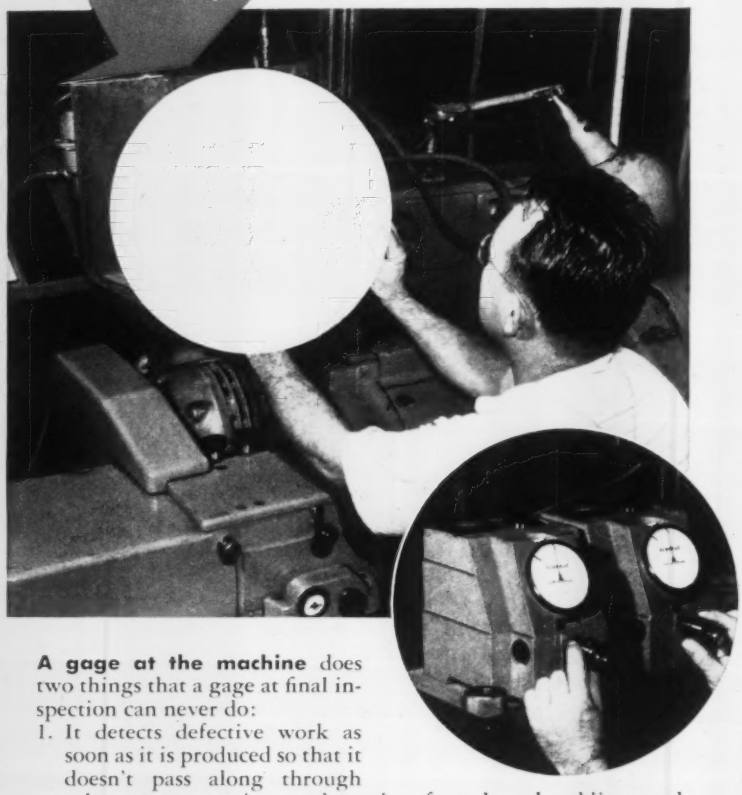
P&H ..quality and service for 74 years

MANAGEMENT BLIND SPOT?

Management, geared to thinking of gaging as a non-productive cost associated with final inspection, seldom recognizes the price it pays for *not* gaging at the machine. But it's a *real* cost that can be found between the lines of the production cost report . . . and one that isn't difficult to eliminate.



A gage at the machine does two things that a gage at final inspection can never do:

1. It detects defective work as soon as it is produced so that it doesn't pass along through subsequent operations under guise of good work, adding needlessly to your expense.
2. It shows up any trend in dimensions toward tolerance limits in time for the operator to correct his machine so that fewer scrap or rework parts are produced, providing a further cost saving.

This twofold advantage of using gages as *productive* tools, where they can do the most good, is bound to show up in savings that far outstrip the nominal cost of the gages, providing you use an *indicating* gage. Federal designs and produces *all types* of dimensional indicating gages, and can recommend impartially the best type of gage to do your job. Have a talk with your nearest Federal representative and avail yourself of his specialized experience. In the meantime, ask us for the booklet "Management Blind Spot" . . . it's worthwhile reading.

FEDERAL PRODUCTS CORPORATION
8216 Eddy Street • Providence 1, R. I.

Ask FEDERAL *First*

FOR RECOMMENDATIONS IN MODERN GAGES . . .

Dial Indicating, Air, Electric, or Electronic—for Inspecting, Measuring, Sorting, or Automation Gaging

Rivet Shaver

Tungsten carbide rotary file moves two ways to accurately mill titanium, stainless rivet heads

RIVET HEADS must not protrude from the sheet metal surfaces of modern aircraft and missiles, so it's necessary to machine them aerodynamically smooth.

Engineers at Boeing Airplane Co., Seattle, decided they needed a better rivet shaver to handle tough titanium and stainless steels. Their answer: A standard, 1 in., arbor type rotary file made of tungsten carbide, powered by a ¼-in. air drill running at 4180 rpm.

Problem—Standard mills are adequate for aluminum. On tougher metals, cutter life is shorter. Low running speeds and high torque frequently dislodge the cutter and jam it into the adjacent sheet metal.

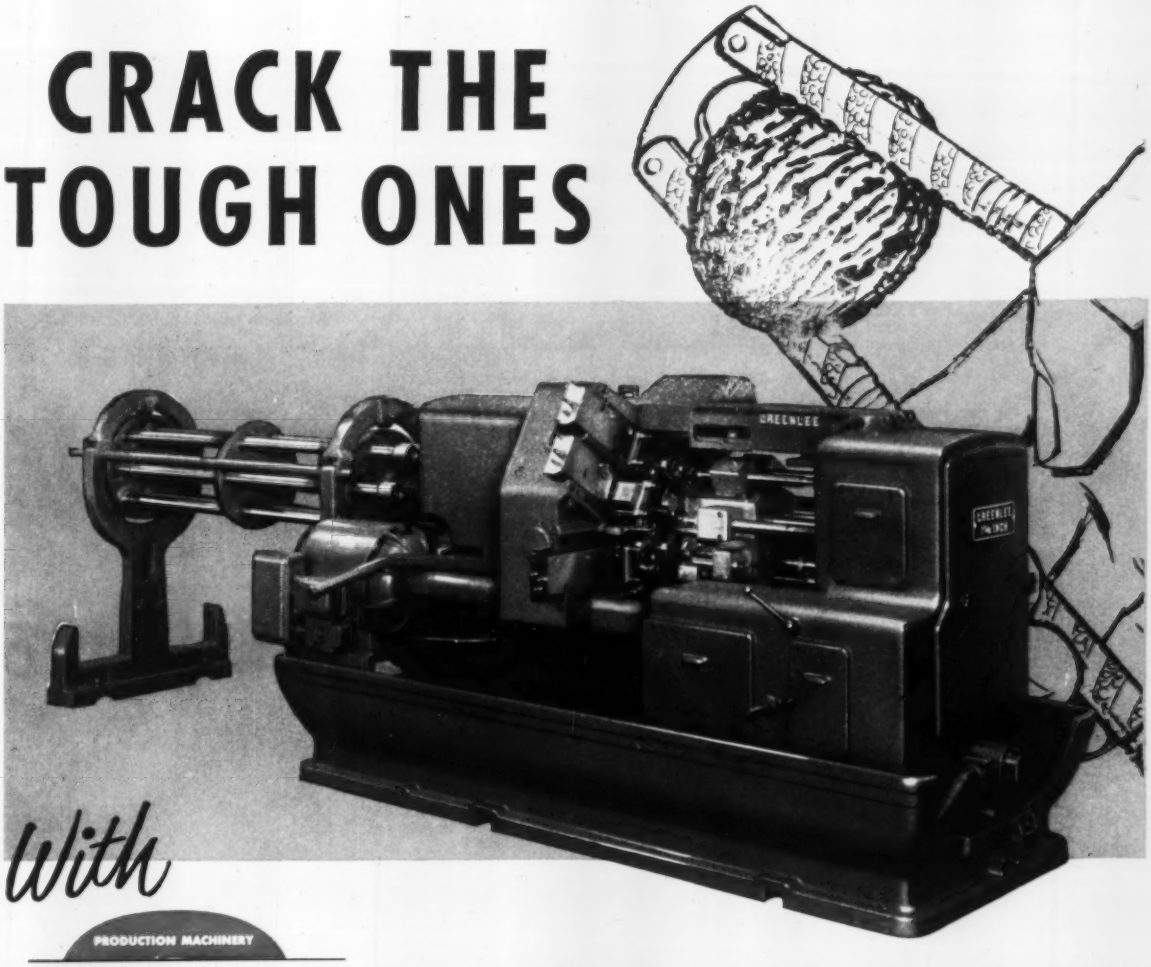
ACCURATE MILL
. . . handles extratough rivets

Preliminary tests showed that a rotary file moving in one axis was practical, although the finish left something to be desired. Boeing designed and constructed a rotary file which moves in two axes. Later tests showed that 1000 titanium or stainless rivets could be machined with one cutter before resharpening.

The new tool can reduce rivet head protrusions to less than 0.002 in. An adjustable threaded housing controls the dimension and practically eliminates damage from overmachining.

The rotary files can be replaced in about a minute.

CRACK THE TOUGH ONES



With

PRODUCTION MACHINERY

GREENLEE AUTOMATIC BAR MACHINES

Greenlee Standard and Special Machine Tools

- Multiple-Spindle Drilling and Tapping Machines
- Transfer-Type Processing Machines
- Six and Four-Spindle Automatic Bar Machines
- Hydro-Borer Precision Boring Machines

Maintain Tight Tolerances with Higher Speeds and Feeds

Greenlee 4 and 6-Spindle Automatics offer you both job range flexibility and sustained production.

The base and frame of Greenlee Automatics are heavy, rigid semisteel castings. Spindle carriers are heat-treated, ground one-piece castings. Headstock is scraped to fit the carriers. Precision spindles are dynamically balanced . . . ride on five widely spaced, pre-loaded, precision ball bearings for maximum accuracy.

Save set-up, maintenance and production time. Investigate Greenlee automatic bar machines. See your Greenlee Distributor.

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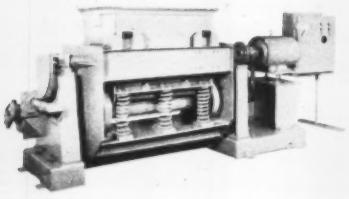
Compare These Data With Your Own Setup . . .



This 30-hp Lorco Vibrator was built for Ford Motor Co.'s transmission division, Livonia, Mich. It has 17½ ft of work space

1300-piece load—Government classified part *		300-piece load—Handle bar stem (forging) **	
Drum capacity	5 cu ft	Drum capacity	13 cu ft
HP rating	10	HP rating	20
Processing cycle	1 hr 33 min	Processing cycle	3 hr 45 min
Compound cost	$0.335	Compound cost	$2.84
Compounds used:		Compounds used:	
RS (nonabrasive cutting)	½ lb	HS-9 (abrasive cutting)	4 lb
MC-3 (alkaline cleaning)	1 lb	MC-3 (alkaline cleaning)	1 lb
		3X (abrasive finishing)	8 lb
		Lustre-All (burnishing)	4 lb
Chip loss (approximate, by weight)	0.4 per cent	Chip loss (approximate, by weight)	7 per cent
Chip used (fused aluminum oxide)	No. 6	Chip used (fused aluminum oxide)	Nos. 00, 0, 4, 6

*Oliver Corp., York, Pa.

**Arnold Schwinn & Co., Chicago.

Vibration Speeds Finishing

Here is a machine offering a wide range of work surface operations at advanced production speeds. Many applications are possible for a variety of materials

IN COMPARISON tests with conventional machines, the Lorco Vibrator removed 200 times as much metal during the first 30 minutes. In long runs, it had a 10 to 1 advantage—although the ratio diminished as the time cycle was lengthened.

Examples—Heavy flash removal on a diecast piece required 15 hours—the vibrator did it in 23 minutes. Stock removal of up to 200 microinches was achieved on hard stainless steel turbine blades in 30 minutes. Processing a drive sleeve went from 48 hours down to 1½ hours, a stem from 33 hours to 3 hours 45 minutes, and a classified part was reduced from 16 hours 10 minutes to 1 hour 33 minutes.

Scrubs—The machine will quickly descale, deburr, grind, fine finish, color, and burnish all metals and their alloys with a scrubbing action. This action keeps the load in continuous motion, and controlled vibration can be supplied with fixed or variable amplitude and frequency.

Small parts can be vibrated free. Heavy parts are racked or fixtured, which reduces the time cycle by 50 per cent. Time can be reduced further by securing the fixture to the vibrating bowl.

The vibrator is adaptable for use in automated production lines, and will handle delicate parts. Surface finishes range between the extremes of coarse and fine. To a certain extent, the machine, built by Lord Chemical Corp., York, Pa., will work in recessed and shielded areas difficult or impossible to reach by other methods.

no chipping - no rusting
no pitting - no peeling

no work-no worry

with ever-bright brightwork of

Superior stainless steel

Let it rain, mist or dew . . . for the lifetime of the car, stainless steel brightwork never needs care. Exposure to the elements can't harm it. You don't lift a finger or pay a penny to keep the showroom shine of *stainless*. ● Strong, hard, ever-bright stainless steel will serve you best on your new car, and protect top value when you sell. *And the chances are, it'll be* SUPERIOR.

Superior Steel

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CARNEGIE, PENNSYLVANIA

(Advertisement)

Special Reports On Finishing Non-Ferrous Metals

NUMBER II—Paint Base, Corrosion-Resistant Finishing with Iridite

WHAT IS IRIDITE®?

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

Chromate conversion coatings are well known and accepted throughout industry as an economical means of providing corrosion protection, a good paint base and decorative finishes for non-ferrous metals. However, continued developments have been so rapid and widespread that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this digest of current information; to bring you up to date on the many ways in which you can obtain proper surface preparation for painting and increase product durability with a single multi-purpose chemical pretreatment. Report I on decorative, corrosion-resistant finishes and Report III on chemically polished, corrosion-resistant finishes are available on request.

First, it is an accepted fact that metal surfaces should be prepared before painting to make possible an efficient paint system. Naturally, this preparation should provide for good initial paint adhesion. Chemical treatments have proved extremely effective in this respect, particularly those of a neutral or preferably acid nature. Further, to be most efficient, chemical treatments should provide a non-porous barrier to maintain adhesion by sealing the metal from the paint and moisture. They should also provide a self-healing film which prevents lateral corrosion in the event that bare metal is exposed through scratching.

The Iridite chromate conversion coatings meet all these requirements. Iridite is a chemical conversion treatment for surface preparation. It provides initial paint bonding by molecular adhesion. It is acid in nature and produces a film that is gel-like and non-porous in structure. Thus, the Iridite film effectively seals the metal from the paint and from moisture penetration. Because the film contains certain relatively soluble constituents, it will protect areas scratched through to bare metal and prevent lateral corrosion. This is accomplished by a gradual leaching of these constituents into the damaged area.

Further, because of its gel-like, non-crystalline nature, the Iridite film will not affect the appearance or texture of the paint film, nor will it dust or powder to mar the painted surface. Because the film is non-porous, paint coverage is increased, thus substantial savings in paint costs will be realized. In addition, treated parts may be stored for long periods of time prior to painting without the risk of entrapped moisture causing blistering when painting.

Iridite chromate conversion coatings are widely used with equal ease and success under both baked and air-dried paint systems. While the actual adherence properties of the Iridite film do not increase appreciably with its thickness, corrosion protection does. The protection of the Iridite film is proportionate to its thickness and should be taken into consideration when selecting the Iridite to meet your needs. However, it is sometimes necessary to sacrifice maximum corrosion protection for appearance when a finished part is to be only partially painted. For example, it may be desirable to use a thin, clear, bright Iridite film if the unpainted areas must present a chrome-like appearance. A typical case is that of instrument housings on which the exterior is painted and the inside left unpainted.

On the other hand, if all surfaces of the product are to be painted and maximum corrosion protection is required, the heavier and most protective Iridite films should be used. For example, all surfaces of zinc die cast fruit juicers are finished with a highly protective Iridite film prior to painting to provide maximum resistance to the corrosive action of fruit juices.

Iridite finishes are now available for all commercial forms of the more commonly used non-ferrous metals, including zinc, cadmium, aluminum, magnesium, silver, copper, brass and bronze. In addition to providing an excellent base for paint, the Iridite films also have high decorative value when used as final finishes in themselves.

These films can produce a wide variety of pleasing appearances including clear bright, iridescent yellow, bronze, olive drab and brown. In addition, many films can be modified by bleaching or by dyeing. Among the dye colors available are various shades of red, yellow, green, blue or black.

In planning or designing, you should consider the many other characteristics of Iridite finishes which may enter into the specific problem. In addition to their functions as protective and decorative finishes, and as bases for organic finishes and bonding compounds, Iridites have low electrical resistance. Some can be soldered and welded. The film does not affect the dimensional stability of close tolerance parts.

Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product requires the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 East Monument Street, Baltimore 5, Maryland.

Air Gage Checks Hub

Hard-to-reach places are easily measured with devices like this. It checks taper, too

BULLARD CO., Bridgeport, Conn., needed a way to measure the entire outside diameter of the hub on one of its gears. Because of its small size and shape, ordinary micrometers could measure only the tip.

The solution was an air ring which fits over the hub. It has a pair of measuring air jets close to the bottom of the bore. By raising or lowering the ring, an operator can check the outside diameter of the hub to within 0.0001 in.

Maker—The ring is used with a Dimensionair, made by Federal Products Corp., Providence, R. I. A master is used for zeroing the gage.

AIR RING

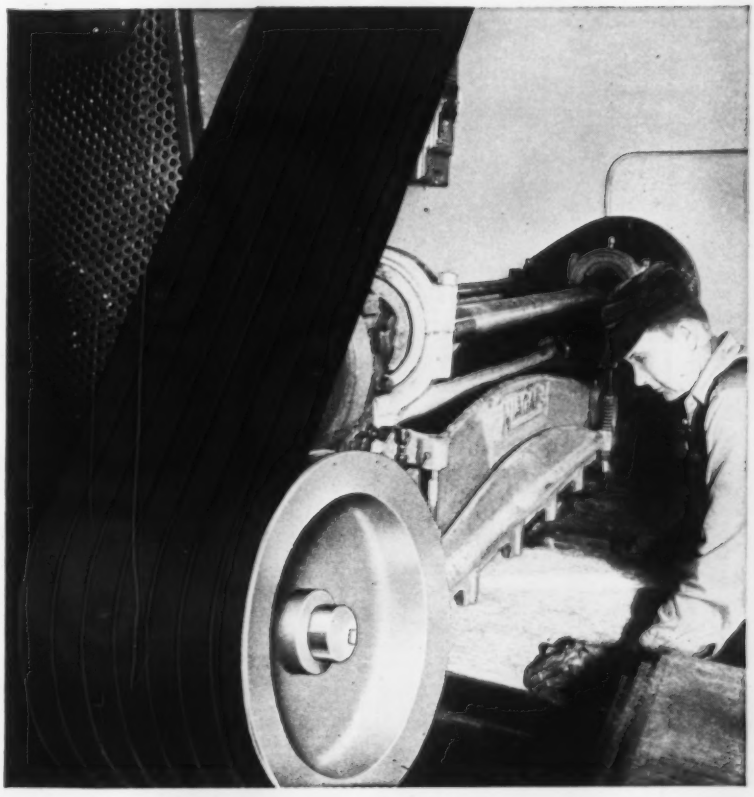
. . . reaches bottom of hub

The unit, illustrated above, has a common air supply and pressure regulator.

It can also be used for measuring taper. A taper plug or ring has two sets of air jets, each tied into its own air meter. A single master sets the gage. An operator can read taper variations directly on the dial scales.

Other Types—Air gages can be adapted to a wide variety of holes, cylinders, and odd shapes. Accuracy depends on the gap between the part and gage.

Automotive installations feature units which use 20 or 30 gages. Examples: Camshafts and crankshafts. All dimensions are checked by one fixture.



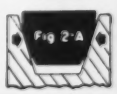
Industry's No. 1 choice... the V-Belt with concave sides

Here's the reason:
the concave sides of Gates V-Belts *insure far longer belt life.*

Make this simple test. Bend a Gates V-Belt with concave sides (Fig. 1) as if it were going around a sheave. Feel how the sides *fill out* . . . become perfectly straight (Fig. 1-A). Note how this belt makes full contact with the sides of a sheave . . . grips the sheave evenly, distributing wear uniformly across the sides of the belt. Uniform wear lengthens belt life — keeps costs down.

Now make the same test with a straight-sided belt (Fig. 2). Feel how the sides bulge out, (Fig. 2-A) concentrating wear at the points shown by arrows. Uneven wear shortens belt life; increases belt costs.

Because Gates V-Belts with concave sides are so universally preferred, they are also the *most widely available*. There are Gates distributor stocks in industrial centers throughout the world.



The Gates Rubber Company

Denver, Colorado

World's Largest Maker of V-Belts

TPA 312

Gates

Gates VULCO ROPE Drives

Here's what steel Kaiser

COMPARATIVE ENDWALL TRIAL "... had inspected walls day prior to accident and noted Kaiser Periclase Chrome Metal Encased Brick sections were plumb, in line and tight whereas competitive sections were bowed and leaking."

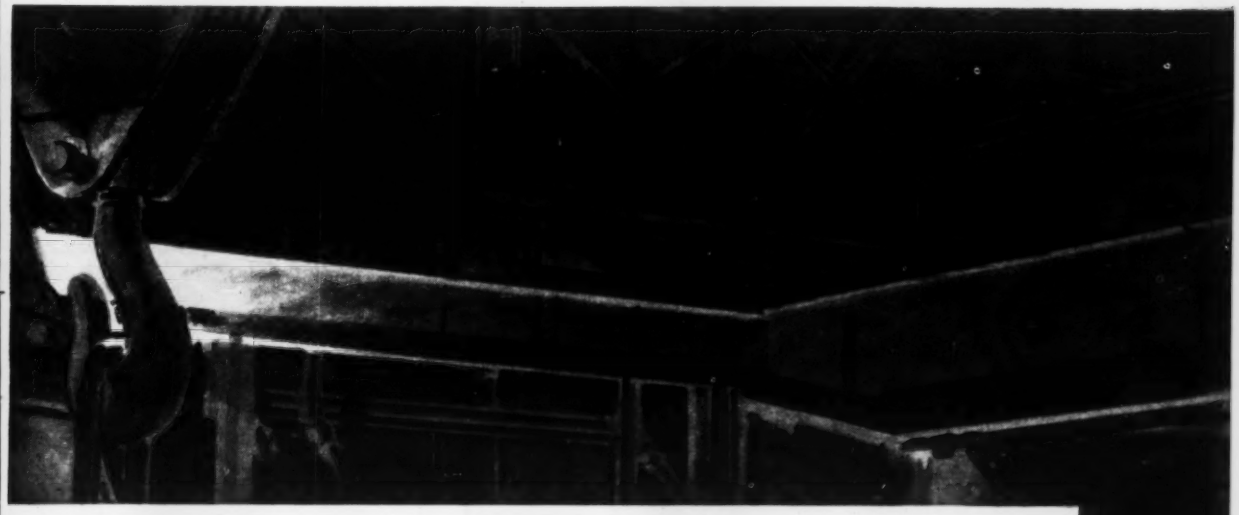
BACKWALLS "... having tremendous success with Kaiser Chrome Periclase Brick in backwalls ... on rebuild, gave instructions to leave it in for another campaign."

HOT TAP HOLES "... averaging between 20 and 25 heats with Permanente 165 on the 300-ton furnaces, where competitive mix previously gave 3 to 5 heats."

ENDWALLS "... Panels of Kaiser Periclase Chrome Metal Encased Brick went 402 heats while competitive panels in the same campaign were replaced at 265 heats."

BOTTOM PERFORMANCE "... Permanente 165 bottom has tapped 413 heats with delay figure of 3 minutes while competitive bottom - rammed five days earlier - has tapped only 360 heats with an average delay figure over bogey of 11 minutes."

ENDWALLS "... Furnace finished its third campaign using Kaiser Periclase Chrome Brick endwall for a total of 562 heats. Other furnaces using competitive brick usually lasted only 200 heats - one campaign."



industry users are saying about Basic Refractories

One of the most significant things about these statements from Kaiser Chemicals customers is that each of them illustrates a *new performance or production record* made possible by changing to a Kaiser Chemicals basic refractory product.

Why this uniform superiority?

Kaiser Chemicals refractories are *especially designed* for peak performance in specific applications in open hearth and electric steel furnaces. Each is a specially-developed composition . . . each is backed by more than 15 years of continuous research and development.

The uniform composition of Kaiser Chemicals refractories—your guarantee of dependability—is assured by Kaiser Chemicals fully-integrated facilities, controlling quality from initial production of sea water magnesia to assistance in final installation at your mill.

Call or write Kaiser Chemicals Division, Dept. S-8245, Kaiser Aluminum & Chemical Sales, Inc., at any of the addresses listed below.

PITTSBURGH 22, PA. . . . 3 Gateway Center
HAMMOND, IND. . . . 518 Calumet Building
OAKLAND 12, CALIF. . . . . 1924 Broadway

KAISER CHEMICALS BASIC REFRACTORIES FOR THE STEEL INDUSTRY:

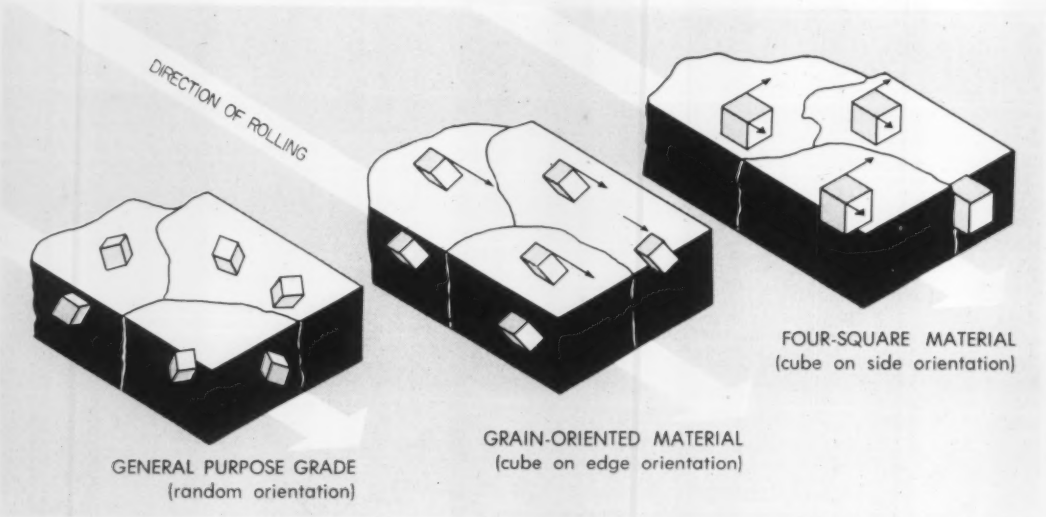
Kaiser **PERICLASE** Brick (D-S)
Kaiser **PERICLASE-CHROME** Brick
Kaiser **CHROME-PERICLASE** Brick
Permanente 165 Ramming Mix
Permanente 84 Ramming Mix

KAISER CHEMICALS

Pioneers in Modern Basic Refractories

REFRACTORY BRICK & RAMMING MATERIALS • CASTABLES & MORTARS
MAGNESITE • PERICLASE • DEADBURNED DOLOMITE • ALUMINAS

Grain Orientation in Silicon Iron Alloys



In grain-oriented materials, 80 per cent or more of the crystal lattices are aligned in a direction favorable for magnetization as shown by the small arrows. Orientation of general purpose materials is much more random. The distinction depends on the alloy composition, mill processing, and heat treatment the metal receives

ELECTRICAL STEELS:

How To Choose and Improve Them

By 1970, we'll be using more than 2 million tons of silicon steels a year. Look for more companies to be making electrical machinery which uses these steels

WE ARE DOUBLING our use of electrical power every ten years. That means more transformers, more motors, more electrical equipment of every kind.

It undoubtedly means more companies will be making electrical machinery. Their success will depend a great deal on how much they know about the selection and handling of electrical steels.

Why Use Them—Silicon steels (see chart, Page 117) are needed in electrical devices to form magnetic cores. The electrical properties wanted—high permeability, high resistance, low hysteresis loss—are characteristic of these materials.

Buyers have the choice of fully or semiprocessed materials. The semiprocessed are less expensive because they have not received the final annealing treatment which improves magnetic properties.

Making a Choice—Both materials are available in grain-oriented and general purpose grades. The right steel depends primarily on its final application (see chart) but the choice usually is a compromise. Grain-oriented materials are used in large transformers and turbine generators because their magnetic losses are particularly important. General purpose grades are used in small motors and inexpensive transformers because electrical losses and magnetizing current are relatively less important than cost of the materials. Efficiency, size, mechanical properties, and noise level all have

Commercial Silicon Steels (Silicon-Iron Alloys)

AISI Number	Grade	Nominal % Silicon	Electrical Losses In Watts per Pound* at 15,000 Gausses		Typical Applications
GENERAL PURPOSE					
	Common Iron	0.007	No guarantee		Fractional horsepower motors.
M 50	Field	0.25	No guarantee		Intermittent duty fractional horsepower motors.
M 43	Armature	0.70	3.90		Small and fractional horsepower motors, field poles, and other magnetic circuits where high permeability is desired and core losses are of lesser importance.
M 36	Electrical	1.30	3.30		Better class of small motors and generators of medium efficiency.
M 27	Motor	2.80	2.46		Motors and generators of good efficiency. Small transformers and reactors where medium core losses are desirable.
M 22 D	Dynamo	3.25	2.00		High efficiency motors, generators, small and medium sized intermittent duty transformers, reactors, and meters.
M 19	Transformer 72	3.50	1.78		Core structures in high quality rotating machines, small transformers for electronics, and large ones for frequencies lower than 60 cycles.
M 17	Transformer 65	3.80	1.62		Rotating machines and transformers.
M 15	Transformer 58	4.00	1.46		Distribution power and specialty transformers.
M 14	Transformer 52	4.50	1.33		Power and distribution transformers and rotating machines.
GRAIN ORIENTED			With Rolling Direction	Across Rolling Direction	
M 10	Transformer 100	3.25	1.00	1.50	Most efficient power and distribution transformers and reactors.
M 9	Transformer 90	3.25	0.90	1.45	
M 8	Transformer 80	3.25	0.80	1.40	
M 7	Transformer 73	3.25	0.73	1.85	
M 6	Transformer 66	3.25	0.66	2.10	

*29 gage—0.014 in.

By B. A. RUEDIGER
Industrial Heating Dept.
General Electric Co.
Shelbyville, Ind.

to be balanced against cost.

Concessions must be made in every case. There is no simple rule to follow. Virtually all General Electric power and distribution transformers and all specialty transformers and reactors above 2 kva now use grain-oriented material for higher efficiency, size reduction, and low noise level.

Certainly, the user should consider magnetic and mechanical properties.

Magnetic Properties—Uniformity of magnetic properties in a sheet is significant: The design of electrical equipment must be based on the

Users must stress relieve or anneal silicon steel parts to bring out their best mechanical and electrical properties. Furnaces for this work include roller hearth, mesh belt, cylindrical bell, and elevator types

Coatings for Silicon Steels

Coating	Properties	Major Uses
Oxidized, steam blued, or annealed surface.	Insulation quality only fair. Can withstand normal stress relieving temperatures.	Small air cooled or oil immersed cores.
Organic enamel or varnish core plate.	Cannot be stress relief annealed. Enhances punchability. Resistance to oil immersion depends on type.	Separate types for cores not immersed in oil and for air cooled and oil immersed cores.
Inorganic ceramic core plate.	Will withstand stress relief anneal. Highly abrasive to punches.	For air cooled or oil immersed cores. Main use is for wound cores. Not recommended for lamination stock.
Chemically treated or phosphated surface.	Can withstand stress relief anneal. Improves punchability.	For air cooled or oil immersed cores.
Inorganic insulation with ceramic fillers.	Improved surface resistance. Can withstand stress relief anneal.	Air cooled and oil immersed cores.

poorest rather than the optimum properties of the material. High permeability at high flux density, high saturation density, low core loss at practical operating density, and low coercive force are often equally important.

The user can enhance some properties, such as core losses, permeability, and coercive force, by heat treatment in his own shop. Saturation and nondirectional magnetic properties depend on the choice of material of the right chemical analysis; the user can do nothing to change them once the steel is in his shop.

Mechanical Properties — Punchability, flatness, ductility, and dimensional stability are mechanical properties to consider. The major advantage of semiprocessed material (aside from its lower initial cost) is its superior punchability, resulting in lower die costs.

Punchability tests made by GE showed a maximum of 17,000 cuts between die grinds with fully processed materials. Punchable grades of fully processed steel gave 25,000 cuts between grinds. In contrast, semiprocessed steel permitted over 100,000 cuts before the dies had to be reground. The same die was used for all tests.

Other Considerations — Not all grades are available in semiprocessed form. Besides, initial cost and fabrication advantages may be canceled by problems of flatness, punched dimensions, and sticking brought on by the high final annealing temperatures required.

Weldability is important, too. It depends on the chemistry and the final annealing cycle. Practice has been to weld motor laminations and anneal afterwards, even though it is harder to control distortion and weld cracking when annealing follows welding.

New Materials—Users can look forward to better electrical steel which will improve the final product and make fabrication easier. Watt losses have been cut in half for general purpose materials (and in half again for the grain-oriented ones) since silicon steels were first rolled. We can expect more improvement.

Recently, several manufacturers announced alloys having grain oriented in two directions (see drawing). The material has only 10 per cent higher losses in the direction perpendicular to rolling than in the rolling direction. The alloys are coming out of the pilot stage and will probably be rolled in quantity soon.

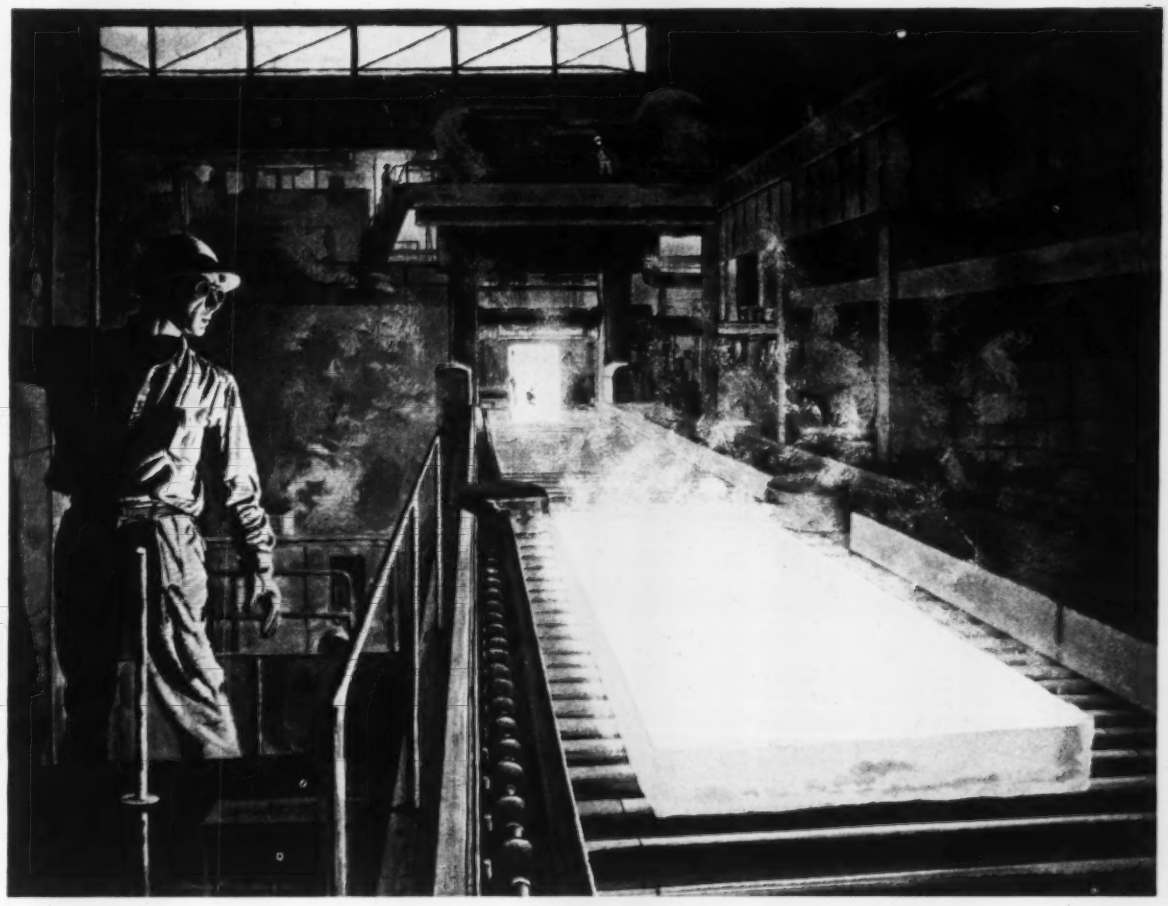
Limitations—Although the user of electrical steels may choose semiprocessed materials for their lower price and superior punchability, he must figure in the cost of doing the final heat treatments himself. Even if he chooses fully processed steel, he may find it necessary to stress relieve the material after working it.

Stress Relief—Punching and cuting induce stresses which damage magnetic characteristics such as core loss and exciting current values. Heat flattening may also induce strains which increase losses.

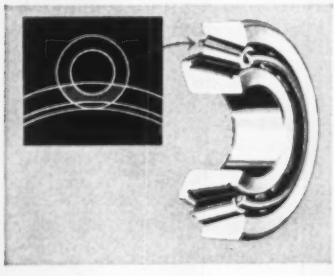
The user generally follows the last cutting operation in fully processed steel with a stress relief anneal in controlled atmosphere. The apparent optimum for material containing 3 per cent silicon or less is 1300° F. Higher silicon materials require individual consideration: The best stress relieving temperature may be between 1200 and 1750° F. The optimum for grain-oriented material seems to be 1475° F, except for assemblies such as cores where a higher temperature appears necessary.

Holding at temperature is seldom required beyond the time necessary to assure uniform heat throughout the load. Cooling rates may be retarded to prevent excessive distortion of laminations—the work is removed from the furnace at 900° F or less.

Annealing—The final anneal for semiprocessed, general purpose punchings requires heating to 1500-1600° F in a controlled atmosphere. Semiprocessed grain-oriented material should be annealed at 1800 to 2150° F in a reducing atmosphere such as pure dry hydrogen. If coated with magnesium oxide, the material is often held between 1400 and 1600° F for a short time to remove water from the coating be-



Bearings "keep cool" under hot steel!



HIGHER FLANGE IMPROVES ROLLER ALIGNMENT

As shown by the gray area above, the higher flange provides a large two-zone contact area for the roller heads. This greatly reduces wear—practically eliminates "end play". Larger oil groove provides positive lubrication.

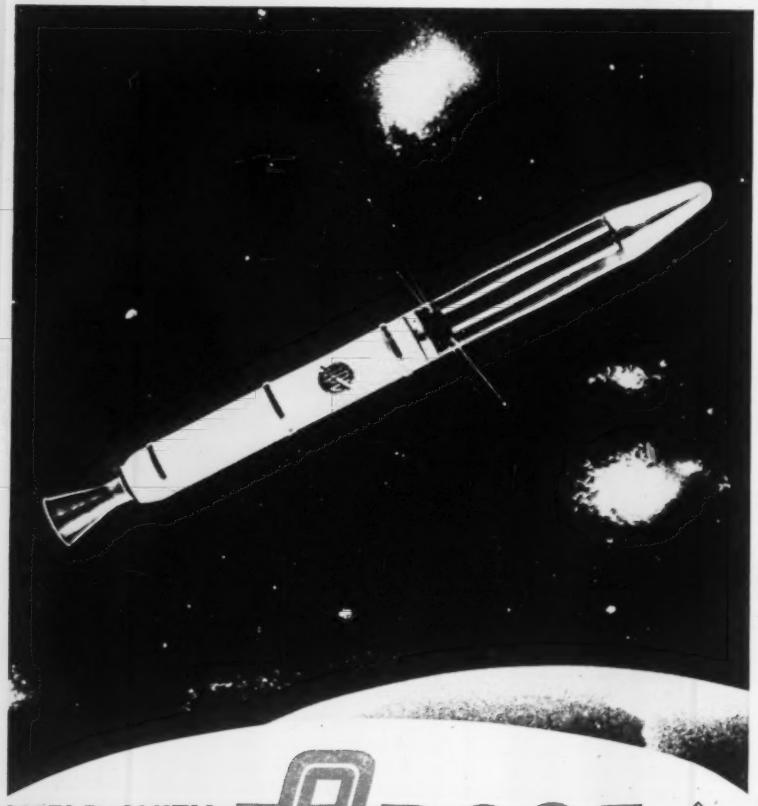
Watch it! Coming down the line—another half-formed slab of red-hot steel! And with it comes a supreme test of bearing excellence. Bower Bearings are equal to it—helping to keep this mill operating smoothly and continually despite heavy loads and extreme temperature. Whatever the job, there's a Bower Bearing engineered to perform just as dependably when the going is toughest. Rigid quality controls and basic bearing design refinements like those shown at the left have reduced Bower Bearing failure to a practical minimum. If your product uses bearings, specify Bower! There's a complete line of tapered, straight or journal roller bearings for every field of transportation and industry.

BOWER ROLLER BEARING DIVISION
FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 14, MICHIGAN

SPHER HONED

BOWER ROLLER BEARINGS

When there's *no second chance* to correct weld metal performance



WELD WITH ARCOS

STAINLESS BARE WIRE

Even the critical countdown can't pre-test every vital factor before launching an earth satellite. Weld metal performance at diverse temperatures, various pressures and speeds can be known only through operation. Explorer I—America's first earth satellite—and Explorer III—designed and built at California Institute of Technology's Jet Propulsion Laboratory—both carry welds made with Arcos materials. Arcos CHROMENAR 12 (Type 410 stainless bare wire) was selected for welding certain components. Here's proof again why Arcos Welding Rods and Bare Electrodes are used so widely when results and performance must be predetermined as accurately as possible. ARCOS CORPORATION, 1500 South 50th Street, Philadelphia 43, Pa.

fore increasing the temperature.

Time at temperature required for grain-oriented material can be short: Virtually all recrystallization and grain growth are complete by the time the material reaches 2150° F. Generally, the material should be cooled not faster than 300° F an hour down to 1000° F to prevent distortion of the laminations. Drop-out temperatures are about 900° F for small laminations, 500° F for large ones.

Atmosphere — Fully processed grain - oriented material usually comes from the mill with a magnesium phosphate, magnesium silicate, or thin natural oxide coating. It calls for a controlled atmosphere which is neutral to slightly oxidizing. A 95 per cent nitrogen and 5 per cent or lower hydrogen atmosphere is satisfactory for material coated with magnesium silicate. Pure hydrogen, pure nitrogen, or dissociated ammonia having no free ammonia are also acceptable. The dew point should be below 32° F.

Semiprocessed, grain-oriented material which has a natural oxide or magnesium oxide coating is usually annealed in pure dry hydrogen of minus 40° F dew point.

General Purpose Grades—These are available with natural oxide, phosphate, silicate, and varnish coatings. Only the natural oxide coated material should be annealed above 1500° F (semiprocessed general purpose material usually has this type coating). Controlled atmospheres are acceptable, one of the most common being lean exothermic gas.

Fully processed general purpose material having natural oxide or other inorganic coating can be annealed at temperatures to 1500° F. A controlled atmosphere such as 90 per cent nitrogen and 10 per cent or less hydrogen, pure nitrogen, or exothermic gas at a low dew point is acceptable.

Oxidation — Many users process laminations after punching to develop a tightly adherent oxide surface. The purpose of the oxide is to improve interlaminar resistance of a stack of laminations. The oxide is frequently produced during stress relieving or annealing for magnetic properties by using a lean exothermic atmosphere.

The controlling factor is the dew point of the gas. For example, laminations can be oxidized by annealing in a lean exothermic gas having a plus 70 to 80° F dew point if they are furnace cooled to below 300° F.

Although the oxide developed by air blast cooling from 800 to 1000° F is often thin and discontinuous, it suffices for small motors. A heavier oxide can often be developed by a combination of high dew points (130° F) and the right air-gas ratios. Reduction of the mill oxide may be necessary before a suitable oxide can be obtained.

Bluing—For some products, such as hermetic motors, a blue oxide is desired. It has a pleasing color and relatively good corrosion resistance.

The most common bluing cycle starts with annealing in a neutral to reducing atmosphere, after which the material is cooled to 1060-750° F and oxidized in dry steam. The oxide will consist of about 15 per cent metallic iron and the balance iron oxide (Fe_3O_4).

Bluing above 1060° F produces an FeO coating which on cooling decomposes to Fe_3O_4 and a high percentage of metallic iron. Oxides formed below 1060° F do not decompose.

Stacking—The manner in which laminations are stacked for batch processing can make a good deal of difference in the success of the heat treatment. Here are some rules:

1. Place the material on a low carbon plate big and thick enough to offer adequate support and not warp at annealing temperatures.

2. Arrange the stack so that the cold spot of the load will reach temperature and can be held there the required time without the hottest portion of the load exceeding the maximum temperature.

3. Stack so that the atmosphere can make good contact with the material. Gas flow is of primary importance. The quantity of gas needed per hour for holding at temperature is about one-fifth to one-seventh the volume of the furnace minus the volume of the charge. For purging, five times that volume per hour is required.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*

When low alloy weld requirements are as *critical* as these

Job report courtesy of McKiernan-Terry Corp., Dover, N. J.

WELD WITH ARCOS

LOW HYDROGEN ELECTRODES

This crosshead weldment—part of a Navy steam catapult for launching jet fighters—must withstand the repeated powerful surges of steam under high pressure. Arcos Tensilend 80 electrodes were used to weld the SAE 4130 low alloy steel. After progressive magnaflux checking, and proper stress relieving, all welds were found to meet the high strength and toughness required for this kind of service. For the *right* weld metal—for the *right* welding techniques—for your tough welding problems—call on Arcos. ARCOS CORPORATION, 1500 South 50th Street, Philadelphia 43, Pa.

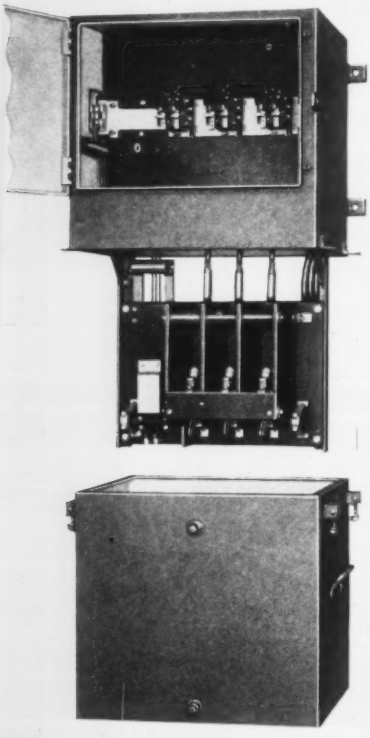
Designed

Specifically for 2300-volt Motors –

NEW EC&M type LZH STARTER

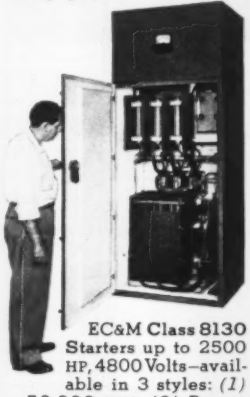
This new starter is compact, lower in cost than EC&M's Type ZHS high capacity oil-break starters, and is especially designed for use where short circuit requirements are small or where high interrupting protection is provided by other means.

You Get these BIG features – at Low Initial Cost



- Wide application—up to 350 HP at 2300 volts. Interrupting capacity 10x full load motor current.
- Self-contained Control Transformer with fused secondary for 220-volt pushbutton operation.
- Type ZTM thermal-magnetic overload relays give inverse time and instantaneous trip protection.
- Heavy-duty Type LZH magnetic contactor.
- Wall-mounted with drop oil tank. Anti-syphon leads between tank and upper compartment.
- Control leads brought to terminal board. Incoming and outgoing cables equipped with solderless power lugs.
- High and low voltage separated by insulating barrier.

Write for Bulletin 8121



EC&M Class 8130 Starters up to 2500 HP, 4800 Volts—available in 3 styles: *(1)* 50,000 KVA *(2)* Power Fused and *(3)* VALIMITOR (unlimited protection without fuses)

THE ELECTRIC CONTROLLER & MFG. CO.

A DIVISION OF THE SQUARE D COMPANY

CLEVELAND 28 • OHIO

1237

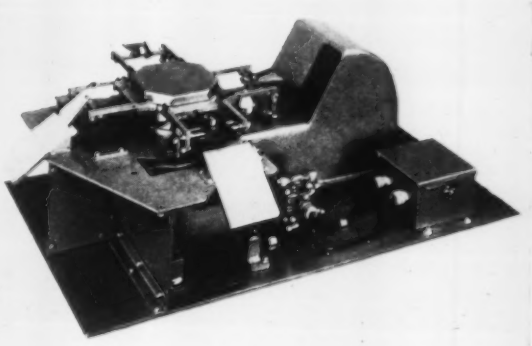
Weight Classifier Adapts to Many Uses and Products

The Basic Weight Classifier is for process control and classifying of products and packages by weight. It is also used for production line inspection of metal assemblies for missing parts, and packages for correct content.

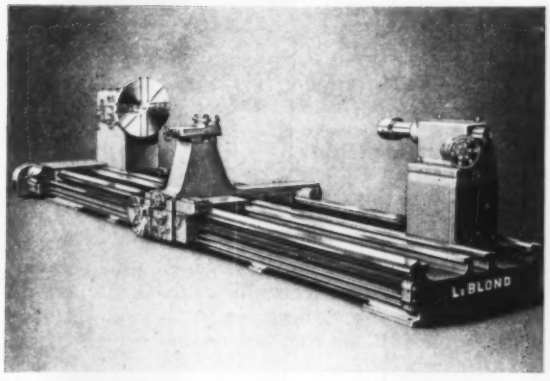
Adjustable crystal photocells provide a precise and reliable electric signal when the preset weight limits (or allowable tolerance settings) are reached.

Capacities range from 2000 milligrams to 100 lb. Receptacles are available for any product size or shape.

A controller may be used to actuate automatic transfer mechanisms, counters, signal lights, alarm signals, or permanent visual chart recorders. *Write*: Exact Weight Scale Co., 917 W. Fifth Ave., Columbus 8, Ohio. *Phone*: Capitol 4-6187



Lathes Do Big Jobs without Big Power Consumption



A lathe requiring relatively small horsepower provides an unusually large swing for turning missile bodies and large cylindrical, tubular, and fabricated parts.

Two models, General One-75 and Admiral Two-120, incorporate wide bed designs to assure that cutting force is properly absorbed. The model shown features two beds integrally cast in parallel. It's designed to swing up to 120 in. with center distance as required.

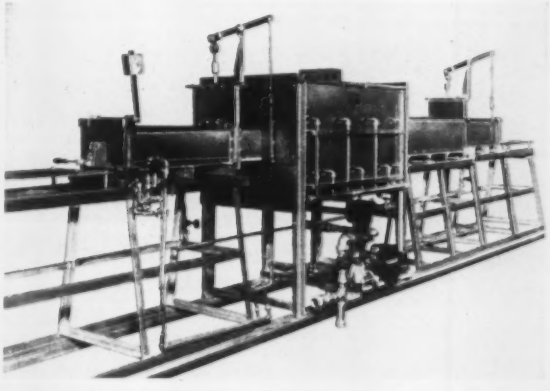
Prices run much less than conventional heavy duty designs of comparable swing. Either machine can be equipped for tracing with Hydra-Trace, a two-way duplicating attachment, or LeBlond's 90-degree tracer. *Write*: R. K. LeBlond Machine Tool Co., Cincinnati 8, Ohio. *Phone*: Jefferson 1-0910

Stainless Steel Parts Brazed, Annealed, and Hardened

A line of hydrogen atmosphere muffle furnaces operates at temperatures from 1150 to 2100° F for bright brazing, annealing, and hardening of stainless steel parts. The operating range of the Series 50 furnaces also permits their use for silver soldering and annealing of ferrous, nonferrous, and precious metals.

Ability of the furnace to handle large or odd-shaped pieces is increased by employing "D" shaped muffle construction which provides a greater working height. Work is pushed through the furnace in alloy baskets.

Burners (many are used) fire top and bottom into both sides of the heating chamber. They are made of heat resisting alloy for long operating life. *Write*: American Gas Furnace Co., Elizabeth B, N. J. *Phone*: Westfield 2-0017

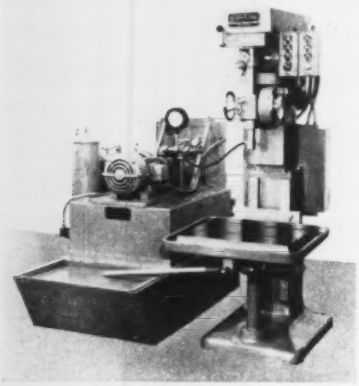


NEW PRODUCTS and equipment

Coolant at High Pressure

This high pressure coolant system can be used with carbide-tipped gun drills.

Model 2HPC has a 140-gallon oil capacity and a choice of motors. The 5-hp motor delivers 10 gph; the 10-hp motor, 20 gph. Pressures are adjustable to 1000 psi.



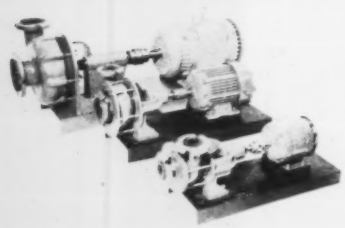
Oil returning from the drill is collected in a settling tank having a removable strainer. Separate low pressure pumps put the oil through two replaceable filters.

Oil temperature is thermostatically regulated by a water cooling system, but refrigeration can be used. Temperature control is adjustable. *Write*: Edlund Machinery Co., 44 Huntington St., Cortland, N. Y. *Phone*: Skyline 6-5661

Pumps Acidproof

Camac rubber lined pumps are suitable for all alkalines and acids except nitric or chromic at temperatures to 210° F.

Any other synthetic rubber plastic lining material can be provided if required. Pumps are from ½ to 20 hp and cover the range from 10 to 1200 gpm at heads of 15 to 120 ft.



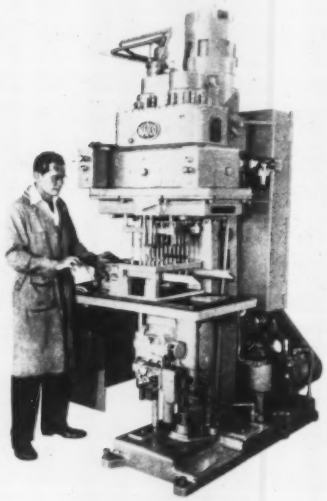
These centrifugal units are constructed so that no metal is in contact with the acid being pumped. *Write*: Carl Buck & Associates, Essex Fells, N. J. *Phone*: Caldwell 6-2283

Machine Drills and Taps

A multiple spindle machine which drills and taps simultaneously can produce 400 parts an hour. Designed to handle a specific job, it is easily adaptable to other uses.

The machine is available with 16 or 24 spindles. Half the spindles are on one side of the head and are driven by a standard electric motor. They are used for drilling. Those on the other side are driven by a high-reversal-duty hydraulic tapping motor.

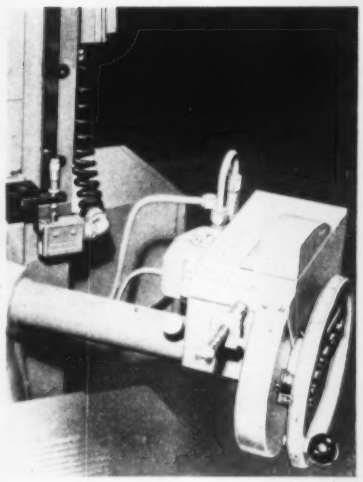
Loading is done during machine operations. Unloading is automatic; parts drop down a chute. A rotating table can be used to maintain high production rates where additional locating or clamping means are necessary.



The unit can be adapted to general purpose use by substituting adjustable arm type spindles for the slip spindles. Units can also be specified for step drilling, chamfering, counterboring, or spot facing. *Write*: National Automatic Tool Co., Richmond, Ind. *Phone*: 2-1183

Grinder Cycling Automatic

Flats, slots, shoulders, and shapes are ground automatically to close tolerance on hydraulic-powered Hydrabrasive precision surface grinders.



By setting the automatic downfeed to actuate on table reversal or saddle reversal, the equipment will operate to preset tolerances.

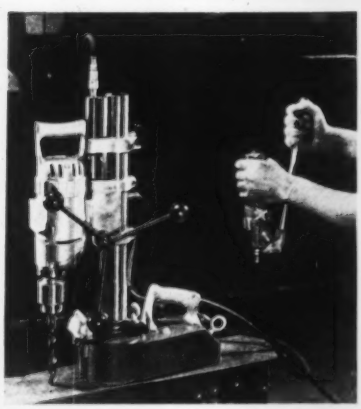
Depending on finish required, the unit will make one, two, or three sparkout passes before automatically shutting off.

The downfeed is set with an infinite increment adjustment of 0.0001 to 0.0025 in. on the elevating handwheel. This adjustment can be varied while the machine is running. *Write*: Abrasive Machine Tool Co., Dexter Road, East Providence, R. I. *Phone*: Geneva 4-0550

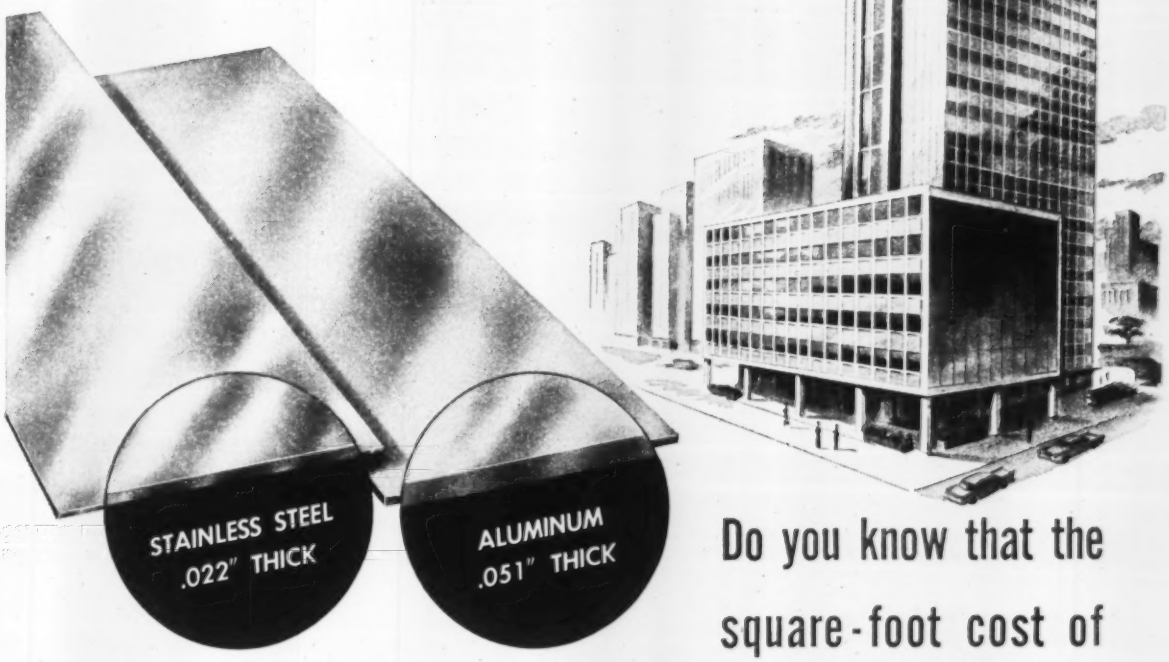
Drill Will Not Overheat

A ¾-in. magnetic drill press combines quality, design, and performance features with lighter weight and lower cost. Accurate drilling, tapping, or reaming operations are possible in all types of steel fabrication, construction, and maintenance.

Built to drill holes within 1/64-in. accuracy, this unit is designed for continuous operation on alternating



STAINLESS COSTS LESS THAN ALUMINUM—



Do you know that the square-foot cost of stainless steel sheet for curtain wall panels is usually equal to or lower than aluminum when compared in thicknesses of equal indentation resistance? For example, Type 302 stainless steel, .022″ thick is equal to .051″ aluminum and costs only 62¢ per sq. ft., as compared to 67¢ per sq. ft. for 3003-H14 anodized aluminum.

For additional information on all gauges, fill in and mail the coupon.

Washington Steel Corporation
WASHINGTON, PENNSYLVANIA

MAIL COUPON *Today!*

WASHINGTON STEEL CORPORATION
61-0 Woodland Avenue, Washington, Pa.

Gentlemen:
Please send me full information on comparative costs of stainless steel vs. aluminum for curtain wall panels.

Name_____
Position_____
Company_____
Street_____
City_____ Zone____ State_____

or direct current. The press will not overheat, assuring efficient maintenance of its magnetic hold after hours of steady use.

The press has a drill point locater for immediate, exact positioning; two-piece construction for ease of handling; and remote control hydraulic power feed which enables the operator to drill while standing clear of the work.

Drilling and tapping capacity is 13/16 in. in steel, with reaming up to $\frac{5}{8}$ in. Length of stroke is 12 in. *Write*: Dept. NP, Black & Decker Mfg. Co., Towson 4, Md. *Phone*: Valley 3-4400

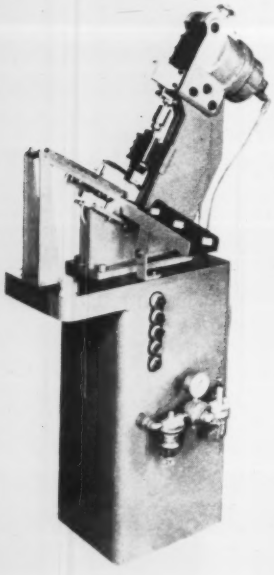
Unit Speeds Marking

A fully automatic, high speed, press for permanent marking of small pieces makes two impressions on opposite sides simultaneously at the rate of 80 pieces a minute.

Model 504 features an air-operated press head of 10-ton capacity mounted at an angle, an inclined feed chute which brings the work under the ram for automatic marking, and automatic air ejection.

The press head operates within a 30 to 100 lb pressure range so that any depth of mark can be achieved by adjusting air pressure.

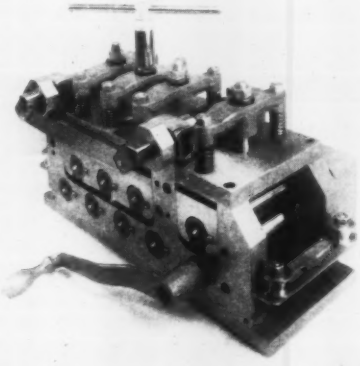
An air-operated dial feed table is also available. The machine has all necessary pneumatic and electrical controls—including combination air control unit and filter, regulator, and lubricator for direct connection to shop air line. *Write*: Noble & Westbrook Mfg. Co., East Hartford, Conn. *Phone*: Butler 9-2717



Rolls Quickly Reset

A heavy-duty stock straightener takes work up to $\frac{1}{4}$ in. thick and 4 in. wide and may be adapted to widths up to 10 in.

Entering and starting of stock coils is done without the necessity of resetting the rolls or losing the original required thickness setting.



A half turn of a control crank releases the top three straightening rolls while the bottom four maintain alignment; another half turn resets the same pressure.

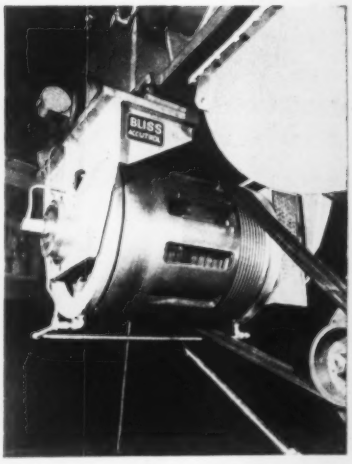
The two adjustable guide entry rolls and the seven pressure rolls are roller bearing mounted. *Write*: Durant Tool Co., Providence, R. I.

Electronic Press Control

Accutrol permits reverse jogging of a press without stopping and reversing the motor.

It is possible to back away at once and save considerable time when setting large dies. Bottoming dies may be brought together with an easy reverse jog and pulled out sharply by normal jog. Jogging torques and speeds are adjustable.

The system also permits new combinations of approaching, working, and return speeds to meet constantly increasing production requirements. It permits a rapid advance to the work, compensated automatic slowdown to prevent tearing blanks, and a fast return. A slight twist of a dial provides the compensation necessary for a difficult job or a poor load of material.



Accutrol does not brake against the frame. It brakes against itself by using alternating current to create a reverse rotating magnetic field between the rotor and field windings. When the backshaft comes to rest, a mechanical holding brake is applied at top stop. *Write*: E. W. Bliss Co., 1375 Raff Rd. S. W., Canton 10, Ohio. *Phone*: Greenwood 7-3421

Refractory Problem Aided

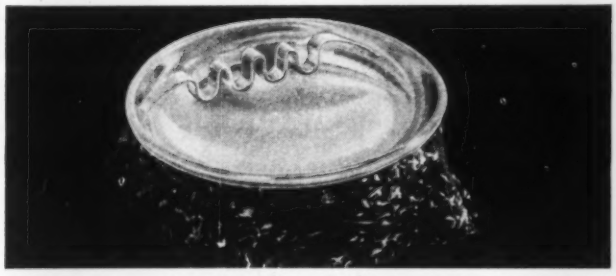
This cylindrical furnace will fire continuously up to 3300° F (in special design up to 3450° F) using fuel gas with a rating of 1000 Btu or better. It cycles automatically in about 48 hours. Firing is tangential.

The furnace's shape provides firm, uniform support to the refractories, allows them to be worked near their theoretical limits, and simpli-

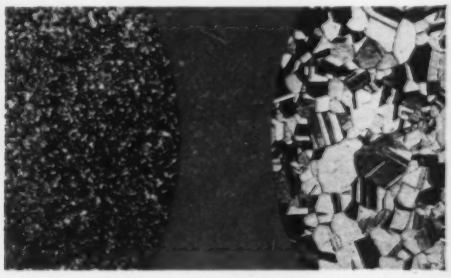
NEW BRASS SPEEDS FINISHING operations for Park Sherman Co.—Formbrite, Superfine-Grain Drawing Brass by Anaconda, reduces polishing time—cuts cost up to 50%—gives clean, easy formability.

TO THE PARK SHERMAN CO., Springfield, Ill., finishing operations are important in giving its line of fine brassware sales appeal—are also weighty cost factors. Switching from ordinary drawing brass to Formbrite, Park Sherman boosted production on the tray of this "Merry-Go-Round" Bar—25% in the cutting operation—42% in finish buff.

THE COVER of this Park Sherman Silent Butler is now made of Formbrite, Anaconda's Superfine-Grain Drawing Brass. Polishing operations in preparation for chromium plating are 50% faster than with ordinary drawing brass.



PRODUCTION INCREASED 47% in finishing operations on this Park Sherman Sta-Put ashtray after the shift to Formbrite. Products shown are only three of many Park Sherman products now made of Formbrite.



THE SECRET of Formbrite's superior polishing characteristics is its superfine-grain. Micrographs (75X): left, Formbrite; right, ordinary drawing brass.

Wherever finishing is an important cost factor in formed or drawn products, Formbrite in sheet and strip is designed to save you money. In brass wire alloys for cold-heading and upsetting, it gives a stronger, springier, more abrasion-resistant product. For more detailed information, write for Publication B-39. Address: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

5848

FORMBRITE®

SUPERFINE-GRAIN DRAWING BRASS

a product of

ANACONDA®

Made by The American Brass Company

fies maintenance and replacement.

An efficient recuperator provides preheated air at maximum temperature for combustion, and exhaust gases at minimum temperature for maximum fuel economy.

The furnace is particularly suited for firing special oxide ceramic bodies above 2800° F. An oxidizing or a reducing atmosphere can be introduced at any stage of the firing.

Safety controls include a temperature limiting system on the recuperator and an automatic gas shutoff valve. *Write*: Harrop Electric Furnace Div., Harrop Ceramic Service Co., 3470 E. Fifth Ave., Columbus 19, Ohio.

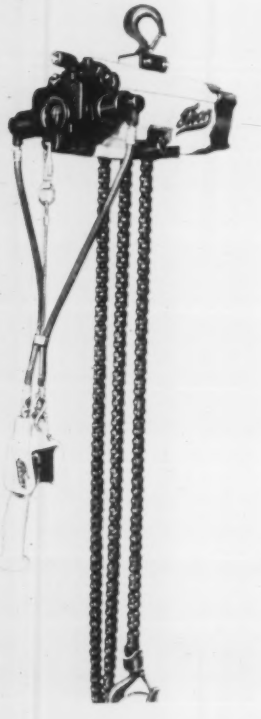
Air Hoist Is Compact

An air-operated chain hoist weighs only 30 lb but it can raise ½-ton loads at a rate of 50 ft a minute.

The Model H-1000 is powered by an efficient reversible eight-blade air motor, and is capable of lowering rates up to 96 ft a minute under maximum load.

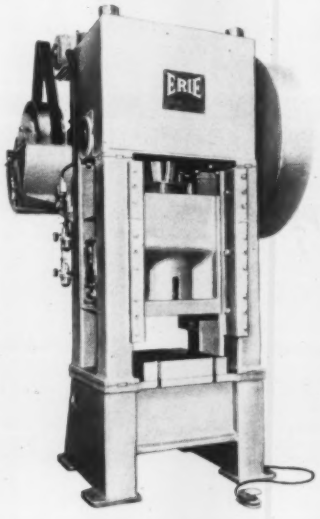
Sensitive throttle control permits accurate spotting of loads and infinite graduation of load lifting or lowering rate from crawl to maximum speed.

The unit is available with manual nylon rope and pendant, or remote, throttle control. Air-cooled disc brakes automatically lock if air pressure fails. *Write*: Thor Power Tool Co., Prudential Plaza, Chicago 1, Ill. *Phone*: Aurora 2-7601



Presses Are Versatile

These single point, straight side presses are primarily designed for trimming forgings. They are also useful for blanking, forming, and drawing operations.



The press frame is of four-piece construction having prestressed strain rods for rigidity. It also has central forced lubrication, air counterbalance, and power ram adjustment.

The unit can be supplied in various speeds and strokes and in sizes from 150 to 600 tons. The former is available from factory stock. *Write*: Erie Foundry Co., Erie, Pa. *Phone*: 2-6754

Magnetic Conveyor

This unit eliminates maintenance and downtime necessary for belt adjustment and alignment. Long wearing nylon guides ride in a track in the conveyor bedplate keeping the belt permanently aligned without fatigue.

The conveyor can be used as a part of an automatic production line or to speed work on individual machines.

No side rails are necessary because of the magnetic bed. Objects wider than the conveyor can be conveniently moved without spillage.

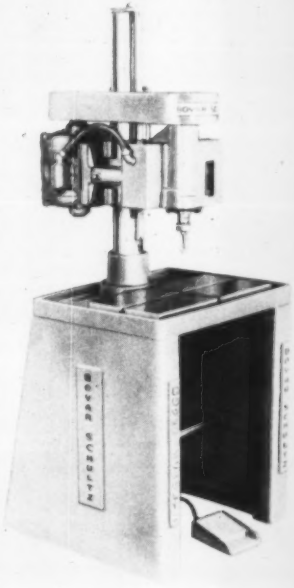
Magnets are the permanent, non-electric type, engineered to job requirements. *Write*: Bosworth Mfg. Co., Mills Road, Avon, Ohio.

Lead Screw Tapping

A general purpose tapping machine for fast and accurate lead screw tapping has positive drive and reversal, a timing belt drive with three speeds, and a special 1 hp, 220 or 440 volt motor with high reversing capacity.

The lead screw is of hardened bearing steel with a ground thread. It has a compensating (jam-free) lead screw nut.

Equipped with a complete coolant



One of Claymont's multi-torch automatic flame-cutters.

by d'Arazien

Main feature of the Claymont story is integration. For instance, consider one phase of our operation—the new Fabrication Shop. First, steel from Claymont's own open hearth is formed into plate on Claymont's own rolling mills and sent to the Fabrication Shop. Here, modern equipment welds, shears, presses, rolls, cuts or machines the plate to produce fabricated products for many industries.

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FABRICATED STEEL PRODUCTS

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We grow so fast our goals are exceeded soon after they are set!

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2. More Jobs—Though employment in some areas has fallen off, there are 15 million more jobs than in 1939—and there will be *22 million more* in 1975 than today.

3. More Income—Family income after taxes is at an all-time high of $5300—is expected to pass $7000 by 1975.

4. More Production—U.S. production *doubles* every 20 years. We will require millions more people to make, sell and distribute our products.

5. More Savings—Individual savings are at highest level ever—*$340 billion*—a record amount available for spending.

6. More Research—*$10 billion* spent each year will pay off in more jobs, better living, whole new industries.

7. More Needs—In the next few years we will need more than *$500 billion* worth of schools, highways, homes, durable equipment. Meeting these needs will create new opportunities for everyone.

Add them up and you have the makings of another big upswing. Wise planners, builders and buyers will act *now* to get ready for it.

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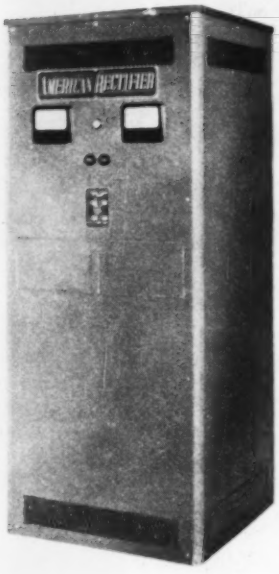
system and work light, the unit has a 110-volt control circuit and a collet and machine capacity of a 7/8 - 9 tap in 1018 steel.

A pedal controls the automatic tapping cycle, leaving the operator free to handle the work. *Write*: Boyar-Schultz Corp., 2000 S. 25th Ave., Broadview, Ill. *Phone*: Fillmore 5-1300

Rectifier Efficient

A line of silicon rectifier power supplies is designed for use in alternating to direct current conversion programs, direct current motors and controls, electromagnets, crane and elevator service, machine tools, presses, magnetic chucks, mining, and transportation service.

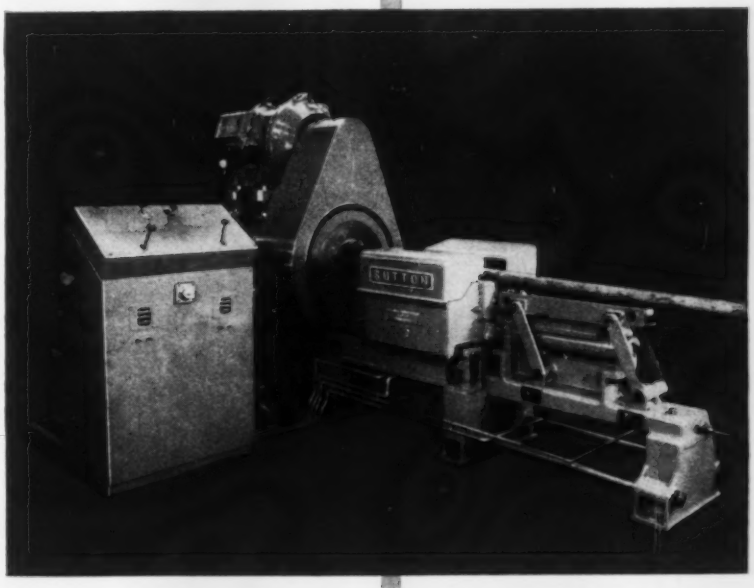


Output voltage regulation is less than 5 per cent for load variations and ripple is 5 per cent rms maximum. Efficiency is about 95 per cent, and power factor 96 per cent at rated loads. *Write*: American Rectifier Corp., 95 Lafayette St., New York 13, N. Y. *Phone*: Worth 6-3350

Hoist Weight Lightened

Lightweight Budgit air hoists are available in link or roller chain types in ¼, ½, and 1 ton capacities

Silent - Running
ROTARY
Swaging Machines



For high-speed swaging of bars and tubes of all modern metals

Now—Sutton offers the best method of reducing ends of bars and tubes and for many other swaging operations.

The silent running design is an exclusive, patented feature. Only when the operator depresses the foot treadle do striking rollers contact hammer blocks. At all other times, the swagers run silently.

Ask for complete data

(PICTURED)

Inverted Rotary Swaging Machine, 4-Die Stationary Spindle Type
Equipped with Hydraulic Power Feed

Also available:

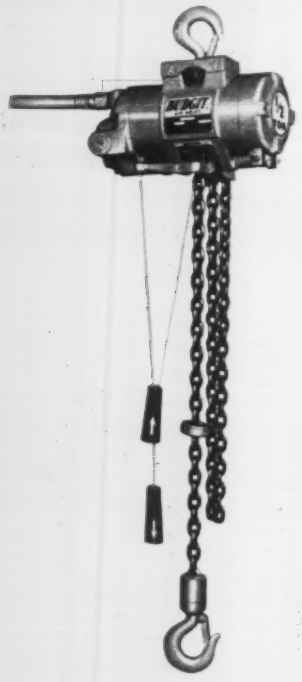
2-Die Rotating Spindle Type Rotary Swagers

SUTTON *Engineering Company*

FIRST NATIONAL BANK BLDG., PITTSBURGH 22, PA.
PHONE: GRANT 1-8077 PLANT: BELLEFONTE, PA.

Manufacturers of Straighteners, Hydraulic Extrusion Presses, Centerless Bar Turners, Rotary Swagers, Sheet Levelers and other finishing machines for all modern metals

NEW PRODUCTS and equipment



for production lifting.

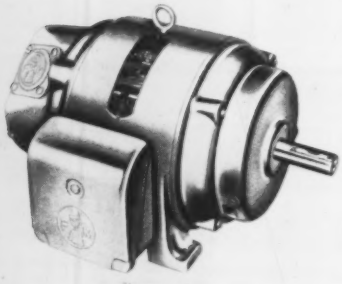
Construction features include aluminum alloy frames; alloy steel, heat treated gearing with machine-shaved teeth; adjustable load brake; muffler; one-hand pendant control; and safety hooks of forged steel.

All models operate on 80 psi air lines. *Write*: Shaw-Box Crane & Hoist Div., Manning, Maxwell & Moore Inc., Muskegon, Mich. *Phone*: 3-1311

Motor Capacitor Efficient

A line of heavy duty, integral horsepower motors is designed to provide high starting torque and operating efficiency.

Dry, electrolytic type capacitors are used for maximum starting torque with minimum current usage.



The motors are especially suited to the severe conditions and high starting torque required for service with: Pumps, fans, drill presses, lathes, sanders, circular saws, and brine agitators.

Type WC2X, single phase, 60 cycle, 115/230 volt motors are available from ¾ to 1½ hp at 1200 rpm, 1 to 3 hp at 1800 rpm, and 1½ to 5 hp at 3600 rpm. *Write*: Fairbanks, Morse & Co., Fairbanks-Morse Bldg., Chicago 5, Ill. *Phone*: Harrison 7-7100

Elevator Serviced Easily

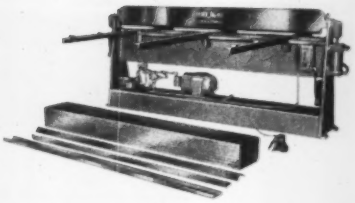
In this hydraulic elevator, the cylinders do not have to be sunk into the ground. With nothing below pit level, installation is inexpensive and servicing easy.

A cluster of three hydraulic cylinders is placed on the left and another on the right side of the elevator. The larger pistons operate first, raising the clusters and the car until the maximum stroke has been reached; then the smaller pistons take over.

An equalizer insures that each cylinder cluster will rise at the same rate regardless of weight distribution on the platform. Capacities range to 10,000 lb and lifts to 20 ft. *Write*: Field Engineering Products Co., division of Wm. F. Endress Inc., 66 Foote Ave., Jamestown, N. Y. *Phone*: 7978

Bending Light-Gage Work

The Chicago Speed-Bender is particularly suited to production bending of heating and ventilating duct sections and similar long, light-gage work. Its capacity is 8 ft of 24-gage galvanized steel.

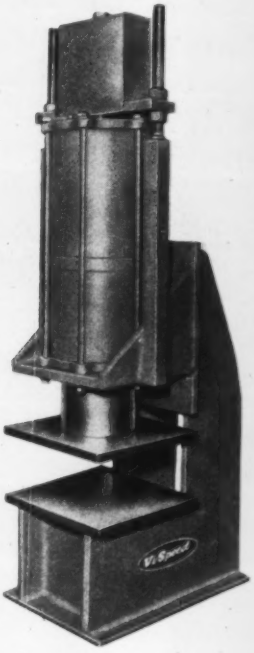


The unit is furnished with a removable, 90 degree female die with a 7/16-in. opening. The ram, removable and adjustable, has a 1½-in. stroke. It has an acute-angle edge which is induction hardened.

A balanced vane-type hydraulic pump, driven by a 3-hp motor, transmits power through two cylinders. *Write*: Dreis & Krump Mfg. Co., 7400 S. Loomis Blvd., Chicago 36, Ill. *Phone*: Triangle 4-1200

Press Platens Removable

Removable 12 x 12 in. platens for easy attachment of dies or heated platens are a part of these 5 and 7½ ton platen arbor presses. They can also be used for regular operations (bending, forming, laminating, and broaching).



Machines have adjustable power thrust and daylight, 4 or 8 in. stroke, 6½-in. nonrotating rams, 7½-in. throat, and 12¾-in. maximum daylight. *Write*: Van Products Co., 5784 Swanville Rd., Erie, Pa. *Phone*: 3-5556

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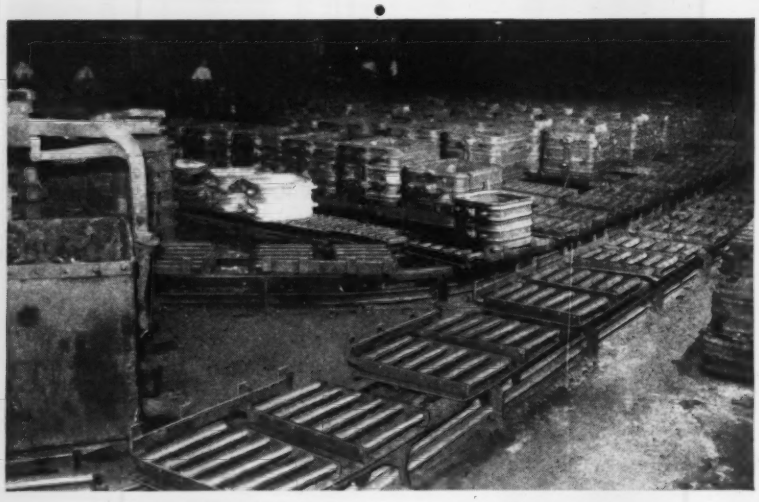

Starting at the molding machines, a complete Standard conveyor system, with transfer cars, is used to move flasks and molds to pouring and storage area, with return lines for empty flasks.

Step up core making production with low-cost roller conveyors

Foundries are finding new savings in production with Standard's low-cost gravity conveyors. One user of national repute states these conveyors have "worked out just fine" for making and handling cores, before and through the oven.

Heavy-duty Standard foundry roller conveyors equipped with shielded bearings make possible smooth, efficient handling of molds and flasks.

Standard offers specialized experience of more than 50 years of designing and building foundry and mill conveyors. For any conveyor need, contact STANDARD CONVEYOR COMPANY, General Offices: North St. Paul 9, Minnesota.

Left: simple, low-cost Standard gravity conveyors speed core making and handling, before and through oven. *Right*: roller conveyors carry molds to the pouring floor.

Send for Standard's special catalog — a valuable reference book illustrating and describing various conveyor installations in leading foundries. Ask for Bulletin 68 — address Dept. **Y-6.**

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OVER 50 years of conveyor experience

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Foreign Licensing

"Foreign Licensing—Questions and Answers" provides reliable information in a concise and practical manner. Pegasus International Corp., 1 E. 53rd St., New York 22, N. Y.

Iron Powder Data

Brochure No. 112 on Ancor MH-100 sponge iron powder (a raw material for the powder metallurgy industry) covers typical chemical analysis, important basic and green properties, and the results in graph form of tests made on plain iron, iron-carbon, iron-copper, and iron-copper-carbon mixes. Hoeganaes Sponge Iron Corp., Riverton, N. J.

Variable Speed Pulleys

Bulletin V-582 gives construction and engineering details on the nine sizes of the Series 90 Vari-Speed motor pulleys. Reeves Pulley Div., Reliance Electric & Engineering Co., 1225 Seventh St., Columbus, Ind.

Stamping Data

Applications of Strenes metal (chromium-molybdenum alloyed gray iron) in the stamping industry are described and illustrated in a data file. It covers drawing and forming die applications. Advance Foundry Co., 107 Seminary Ave., Dayton 3, Ohio.

Material Carriers

A folder lists condensed specifications for the complete line of heavy-duty Gerlinger material carriers. Outlined are design, construction, and operating features available in 12 models which have capacities from 12,000 to 60,000 lb. Folders are available for individual models in the line. Gerlinger Carrier Co., subsidiary of Towmotor Corp., Dallas, Oreg.

Mobile Crane

The Austin-Western hydraulic crane (four-wheel, automotive-type) is covered in two data sheets. AD-2407 covers working ranges and capacities; AD-2422, basic specifications and all available attachments. Austin-Western Construction Equipment Div., Baldwin-Lima-Hamilton Corp., 1952 Barrows St., Aurora, Ill.

Jib Cranes

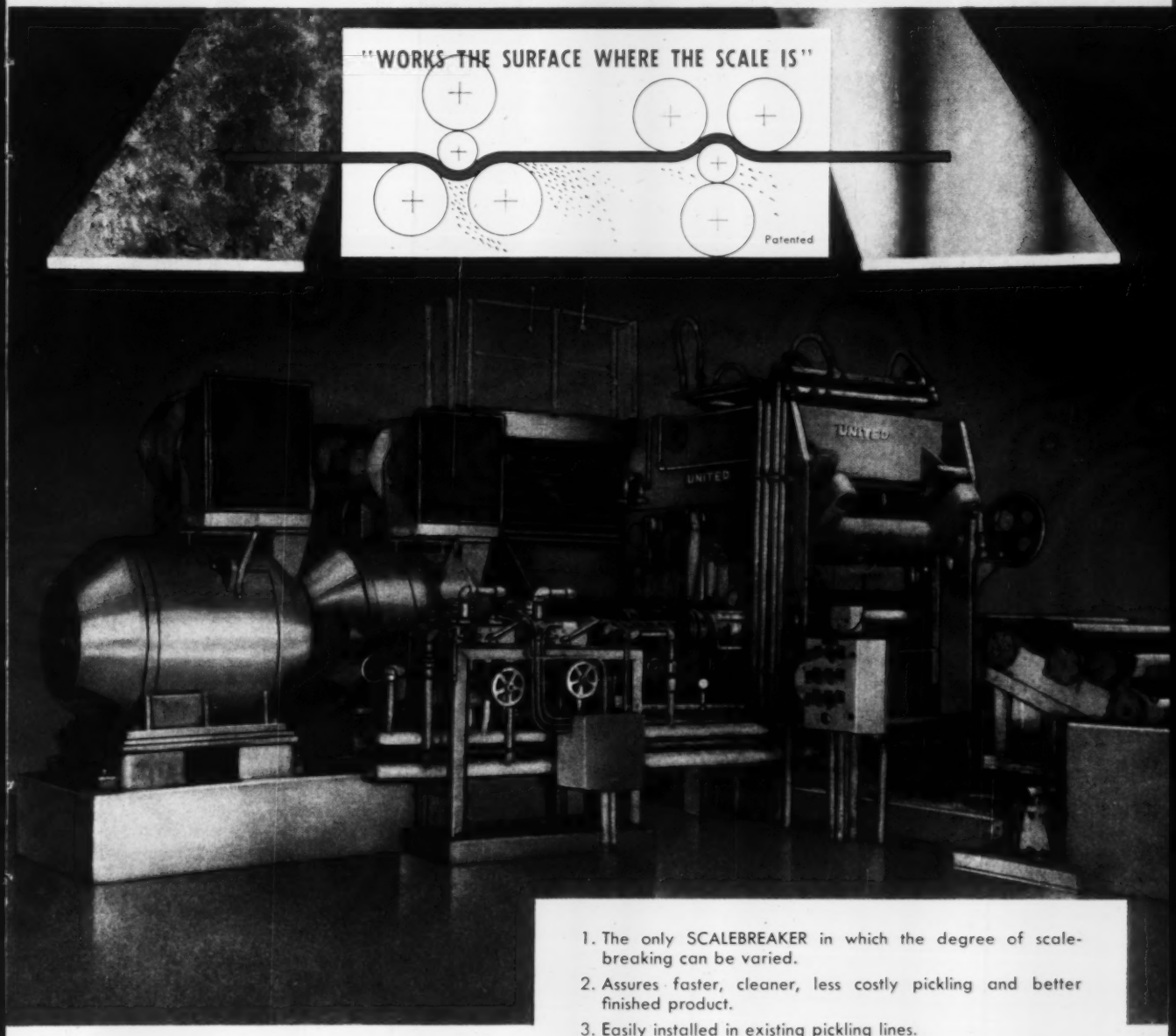
Folder YPP-JC-600-B gives data on construction features, dimensions, weights, spans, and capacities of pillar, pillar bracketed, and mast-type jib cranes. Wright Hoist Div., American Chain & Cable Co. Inc., York, Pa.

Throwaway Tooling Guide

"Throwaway Tooling Set-up and Follow-thru" outlines how the user can obtain maximum throwaway tooling results through the proper use of correct style holders and inserts. Adamas Carbide Corp., Kenilworth, N. J.

UNITED®

NEW *Strip Processing* SCALEBREAKER



1. The only SCALEBREAKER in which the degree of scale-breaking can be varied.
2. Assures faster, cleaner, less costly pickling and better finished product.
3. Easily installed in existing pickling lines.

Write today for complete engineering data.

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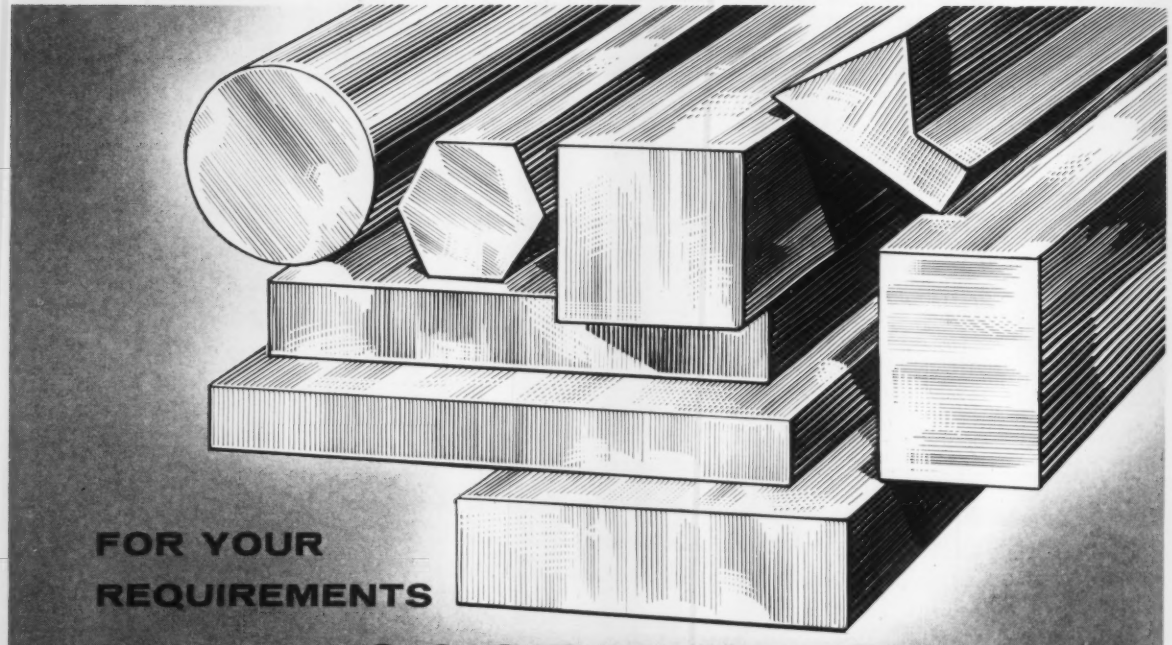
Stedman Foundry and Machine Company, Inc., Aurora, Indiana

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.



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Cold Finished STEELS

CARBON • ALLOY • LEADED

Draw on their large, diversified steel stocks . . . use their efficient cutting and handling equipment . . . take advantage of their experienced technical knowledge . . . order the quantity you currently require and get shipment of the kind of steel you need when you need it.

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WYCKOFF STEEL PRODUCTS: Carbon, Alloy and Leaded Steels • Turned and Polished Shafting • Turned and Ground Shafting • Large Squares • Wide Flats up to 12¾" x 2¼" and 14" x 1¼" • All Types of Furnace Treated Steels

Market Outlook

Production Hits Peak for '58

RESPONDING to improved demand, steelmakers are hiking production for the sixth straight week. They're boosting the ingot rate another 4 points, operating their furnaces at 60.5 per cent of capacity. Output for the week ended June 8 will be the highest of the year: About 1,630,101 net tons of steel for ingots and castings.

Steelmaking's on the rise in all but two districts—Cincinnati and the Far West. The biggest gains are being made at Detroit, where Great Lakes Steel Corp. has scheduled a 16-point pickup, and at Buffalo, where Bethlehem Steel Co. and Republic Steel Corp. have both reactivated open hearths. At Youngstown, four open hearths have been returned to production by Youngstown Sheet & Tube Co.

TIDE REVERSED IN MAY— After seven consecutive months of declining production, steel hit the high road. May's output of 6,350,000 tons surpassed April's by 800,000 tons. For the first time since last September, we had a month-to-month rise in the ingot rate. Furnaces were operated at 53 per cent of capacity, compared with 47.8 per cent in April.

REASONS FOR RECOVERY— Industry observers attribute higher production to three factors: 1. Consumers are buying to fill out impoverished stocks. 2. Seasonal improvements in construction and farm buying are spurring demand for plates, structurals, reinforcing bars, and wire products. 3. Buyers are hedging against a price increase on July 1.

ADMITS HEDGING— William C. Stolk, president of American Can Co., says his firm has been loading up on tin plate because of the threat of higher prices. If tin plate is going up, it won't happen on July 1. Steelmakers must give their customers 35 days' notice, and they've said nothing yet. Chances are that prices won't be raised before the end of the canning season (October). Small packers of perishable goods can't absorb higher costs in midseason.

MILL CUTS BASE PRICES— At a time when all the talk is about prospects for higher prices, Granite City Steel Co. cut base prices on most of its products by $2 a net ton, f.o.b. Granite City, Ill. In effect, this reduced the company's geographical price differential from $4 to $2 a ton.

Granite City made the move to discourage shipments into the St. Louis district by outside producers. As long as the $4 differential was in effect, Chicago district mills could ship sheets into St. Louis by barge (rates are lower in the summer) and undersell Granite City by $1.50 a ton. Now that Granite City has cut its base prices by $2, Chicago mills will probably react by absorbing another 50 cents. As one steelman put it: "In times like these, a $2 reduction isn't going to keep anybody out of that area."

WAREHOUSES LOADED— Warehouse sheet inventories are still high, particularly on secondary material. Customer's specifications are so tight that mills have had to ship big tonnages of rejects to warehouses. In many cases, the sheets are simply offgage or offwidth. Warehouses sell them at cut-rate prices to customers whose requirements aren't too critical—a practice which depresses the market for top quality sheets.

AUTOMAKERS LIMIT OUTPUT— Determined to liquidate dealers' inventories of unsold 1958 cars (now estimated at 750,000), automakers are planning further cutbacks. They turned out 349,474 cars last month—10.4 per cent more than in April but the smallest total for May since 1948.

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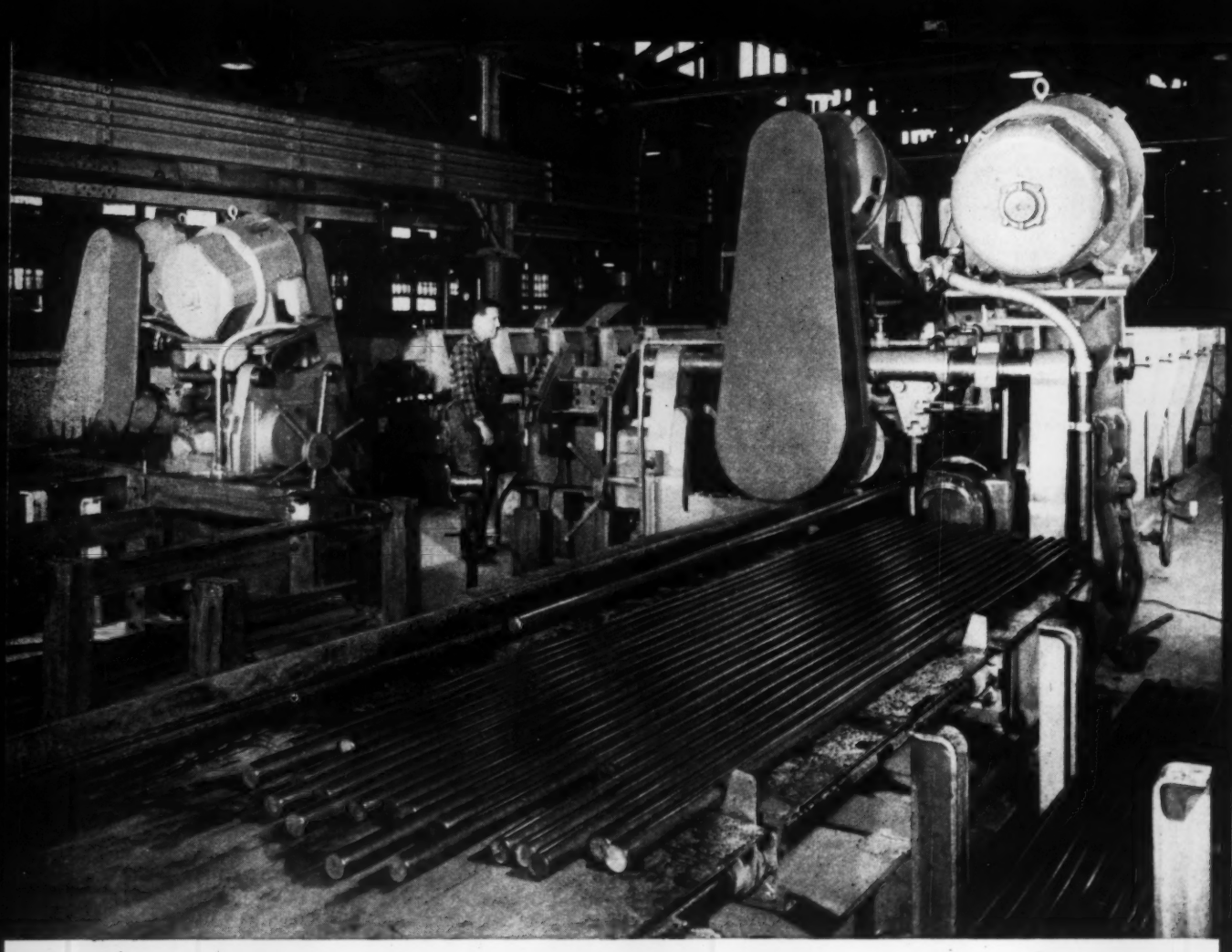

BLAW-KNOX-Medart

provides high speed, precision finishing at American Steel and Wire Cold Drawing Plant

Two Blaw-Knox-Medart high speed, precision straighteners are handling the output of the new drawing line at the Cleveland Plant of the American Steel and Wire Division of U. S. Steel. The line operates at straightening speeds of up to 450 feet per minute on bars ranging in diameter from 1-inch to 4½ inches. The line is completely automated to the extent that bars are fed automatically from the shear to the stocking tables, into the feed troughs for the straighteners, through the straighteners and into the discharge storage cradles.

Either of these 2 and 2 Medart straighteners is capable of handling the entire output of one of the high speed draw benches. High throughput is achieved by means of a completely enclosed V-belt drive to each roll. Roll speeds are synchronized by means of electrical interlocks between the motors.

The Blaw-Knox-Medart Straighteners are standard equipment for straightening and polishing in a direct production line with a draw bench. They are available in sizes to handle bars and tubes in diameters of ⅛-inch to 10 inches. Contact your Blaw-Knox representative for information, assistance or service.

BLAW-KNOX

BLAW-KNOX COMPANY

Foundry and Mill Machinery Division
Blaw-Knox Building · 300 Sixth Avenue
Pittsburgh 22, Pennsylvania

Aluminum Scrap Prices

Dealers' buying price (¢/lb) f.o.b.:	Chicago	Cleveland	New York
Old castings & sheets	9.00- 9.50	9.00- 9.50	9.50-10.00
Borings & turnings (clean, dry, 1% zinc)	8.00- 8.50	8.00- 8.50	6.00- 6.50
Segregated low copper clips	15.00-15.50	12.50-13.00	13.00-13.50
Segregated high copper clips	13.00-13.50	11.00-11.50	12.00-12.50
Mixed low copper clips	14.00-14.50	11.50-12.00	13.00-14.00
Mixed high copper clips	12.50-13.00	10.50-11.00	11.00-11.50

Aluminum Scrap Shifts Show

Supply increases and categories change as the light metal finds new uses. Cleveland and Chicago are about equal as centers of generation and consumption

ITEMS like pots and pans originally were the major source of aluminum scrap; almost all of it was in sheet or cast form. The aircraft industry added clippings, borings, and turnings. When automakers switched to aluminum pistons, they became an important item on dealer lists.

Many scrap categories are changing as aluminum's uses multiply. Clippings are the chief source of scrap; but the growing production of missiles, which demand high temperature resistant steel alloys, indicates that aircraft aluminum scrap generation could decline. Aluminum pistons are now of minor importance; they contain iron inserts and are difficult to process.

New Price Listings—STEEL's dealer scrap categories have been revised (see above) to include the more common grades being generated. The listing is intended primarily as a pricing indicator. Industrial castings and iron-aluminum scrap are sold on a negotiated price basis.

Chicago and Cleveland will be included in the quotations because aluminum scrap prices aren't greatly influenced by world market conditions. (Quotations on other nonferrous metals are.) The new listings should be particularly helpful to small firms that sell scrap to dealers on a contract basis.

The Midwest is still the center of generation and consumption. It's a tossup whether Cleveland or Chicago is most important. Each accounts for about 15 million lb of smelted scrap each month.

More Scrap Coming — Supplies will continue to increase as the auto, appliance, and construction industries boost their consumption. Domestic sales (487 million lb in 1950) climbed to 890 million lb last year, reports the Business & Defense Services Administration. The sales estimate for this year is 800 million lb.

Consumption—About 75 per cent of all aluminum scrap consumed in the U. S. goes to secondary smelters. The rest—all new scrap, generated in industrial processing—is purchased by primary producers. Most of the estimated 60 smelters in the country are in the Midwest.

Only 14 are members of the Aluminum Smelters Research Institute (ASRI), Chicago, but they produce 75 to 80 per cent of all smelter ingots. Latest addition is American Smelting & Refining Co.'s Alton, Ill., smelter which will be operating by September. Its annual capacity will be 72 million lb. Asarco now produces about 2500 tons of secondary aluminum monthly in Detroit, Perth Amboy, N. J., and Los Angeles.

Breakdown—New scrap makes up about 68 per cent of secondary producers' total consumption, estimates ASRI. But the supply of old scrap is on the rise as items like cars produced in the early '50s (they used a lot of the metal) start finding their way to the scrap heap.

Use—ASRI figures that, last year, 86 per cent of all secondary aluminum went to casting companies (some 30 to 45 per cent for diecasting alone); 10 per cent was used for deoxidizing in steel plants; 4 per cent went for destructive purposes in other industries (like chemical).

Sheets, Strip . . .

Sheet & Strip Prices, Pages 150 & 151

It has been expected that sheet prices will go up at least $4 a ton on July 1. But last week Granite City Steel Co. lowered its base prices $2 a ton. What does the move mean?

Actually, the company's action was defensive in character—it covers hot and cold rolled sheets, plates, culvert sheets, porcelain enameling sheets, electrical sheets, and galvanized sheets.

Holds Market Position—While it reduced the company's geographical price differential over other mills to $2 a ton (it had been $4), it assured the retention of its dominant market position in the Mid-America area. It was Granite City's answer to invasions into its home market by outdistrict producers willing to absorb freight to get business that they would ignore in ordinary market circumstances.

Granite City's $4 differential had prevailed since 1954. It was even higher on some products in 1953 and 1952. In addition to the reduction in prices, which was made effective May 30, the company has discontinued its functional allowance to distributors on galvanized corrugated roofing and siding.

Price Hedging—Sheet bookings

are heavier. Some new business reflects price hedging, but some is for inventory replacement. In the East, bookings are the heaviest of any month this quarter. Cold-rolled demand is only slightly improved, being retarded by continued absence of large automotive buying. Auto builders are ordering only enough steel to finish off 1958 model runs.

Detroit steelmen think June will be a better month businesswise than May, just as that month showed improvement over April.

Steel Available — A Pittsburgh mill reports its May sales were 30 per cent better than those in April, some of the improvement being attributed to price hedging. Customers can still beat the price increase on the common grades of sheets. So long as they don't ask for special processing, customers can still get shipments before the end of this month.

Appliances are taking only small tonnage, and stamping shops are buying only for short run bookings.

While the business upturn this month is gratifying, the trade anticipates a sharp dropoff next month.

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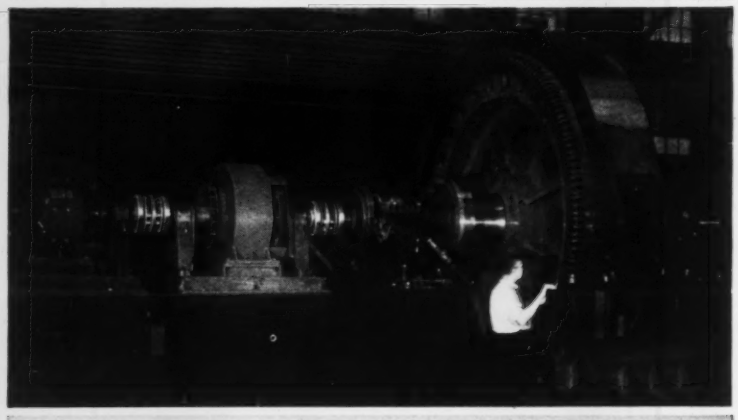

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Write for Engineering Catalog 51A

THOMAS FLEXIBLE COUPLING COMPANY
WARREN, PENNSYLVANIA, U.S.A.

Plates . . .

Plate Prices, Page 149

Plate demand is slightly heavier. A Pittsburgh sales manager says: "We've had a pickup in orders in the last week. Anyone who has a definite commitment for a job is pushing for delivery before the end of this month."

May shipments from the Pittsburgh mills were substantially better than those in April. Sellers there expect June volume will hold up well, but they anticipate a sharp drop in July, especially should some of the current demand prove to be a hedge against a midyear price hike.

In the East, shipbuilding and tank buying is supplemented by requirements for two nuclear facilities in New England—an atomic powerplant at Rowe, Mass., and an installation at the Watertown (Mass.) Arsenal. Pittsburgh-Des Moines Steel Co. is fabricating plate-work for the latter project.

Steel Bars . . .

Bar Prices, Page 149

There's a trace of hedge buying in the steel bar market—but that's all. And, for the most part, it's in the hot-rolled grades. Cold-finished carbon and alloy bars are moving sluggishly, consumers still dragging their feet in placing new tonnage. Largely, they are drawing on inventories, placing fill-in lots as needed to meet their curtailed manufacturing schedules.

Forge shops are ordering little new tonnage. Requirements for screw machine products are coming chiefly from inventories. Alloy fastener volume is off 25 to 30 per cent from last year's. There's still no action in the Detroit market, and sellers don't look for much buying there for another month or so.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 149

More reinforcing steel tonnage is being figured as the building season advances. Public work is prominent, particularly highways and schools.

Some St. Lawrence Seaway work is proceeding in the East, as are some highway bridges, dams, and similar projects.

On the West Coast, bids are in

at Seattle on 1500 tons of bars for an office building and post office for University Properties. Another 1500 tons are pending for an ocean terminal at Anchorage, Alaska.

Mill backlogs are rising. Shipments are becoming more extended. But prices are weak at the distributor and fabricator levels.

After August, the Texas Highway Commission will buy only American-made steel products for road building projects.

Wire . . .

Wire Prices, Pages 151 & 152

Some price hedge orders are being placed for wire products, both merchant and industrial. That is resulting in a slight pickup in mill operations. To the extent of hedge buying only, June orders will surpass those placed in May. In the East, rods, not finished wire, account for much of the buying.

Demand is substantially heavier for highway mesh to be shipped in third quarter. Also, concrete prestressing wire demand is rising. Orders for industrial grades continue to drag, and no marked improvement is anticipated until auto volume picks up in August and September. July will probably be the slowest month of the year.

A substantial increase in wire orders is reflected in a stepup in operations (from 50 to 70 per cent) by Colorado Fuel & Iron Corp., Pueblo, Colo.

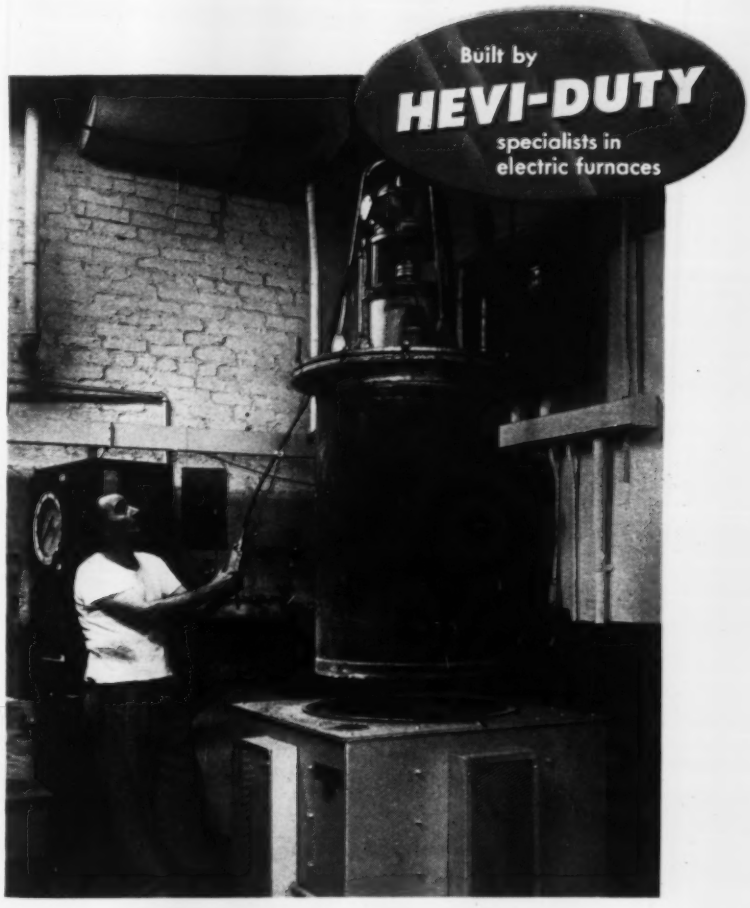
Tin Plate . . .

Tin Plate Prices, Page 151

"So far this year, our shipments have been close to last year's" says a Pittsburgh tin plate sales executive. "The next three or four months will tell the story. Mill inventories are still pretty big, we're shipping more than we're producing, but canmakers' stocks aren't too high."

Crown Cork & Seal Co. Inc. has sold its electrolytic tin plate plant at Baltimore for an undisclosed sum to National Steel Corp. The facility will be utilized in National's Weirton Steel Co. operation.

Its annual capacity of 155,000 tons of tin plate once supplied half of Crown's needs. The rest was bought on the open market. From now on, all will be purchased, some undoubtedly from the former Crown



Two Retorts Double the Furnace Output at Cannon Electric Company

Cannon Electric Company, Los Angeles, age hardens as many as 150,000 beryllium copper springs in a single retort load, while a second retort slow cools with the springs protected by a special atmosphere. This produces bright, scale-free parts, yet permits constant use of the furnace. The Company chose a Hevi-Duty "Versa-Duty" pit furnace to do this double duty for several reasons:

They like its excellent uniformity. Temperature variations are held within plus or minus 10° F. despite the dense load. They like the fact that the fan is installed in the cover for easy servicing. They also appreciate its low maintenance. It has required nothing but normal lubrication since it was installed.

For more information on "Versa-Duty" pit furnaces, write for Bulletin 755.

- Heat Processing Furnaces
- Dry Type Transformers
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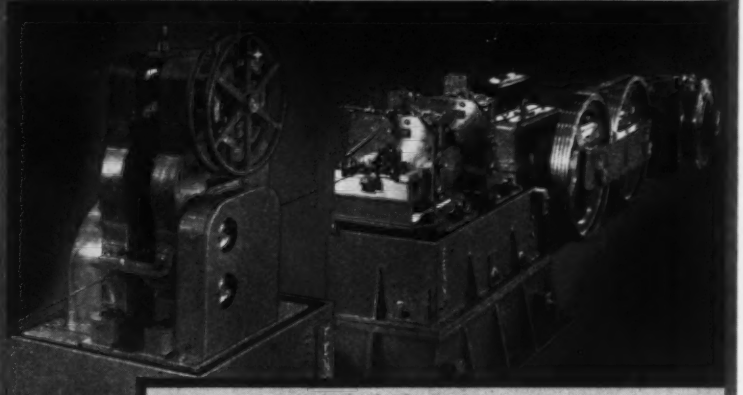
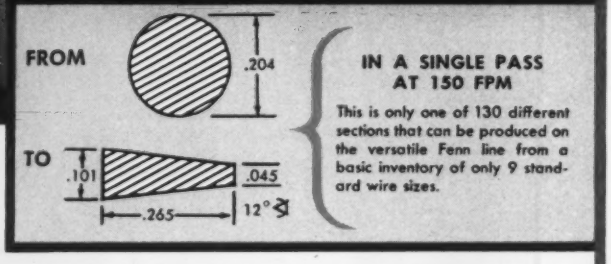
Copper Commutator Bar Line

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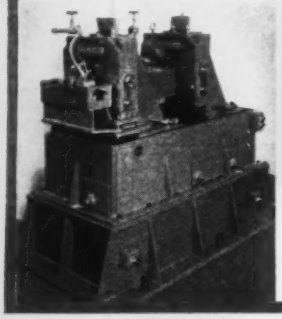
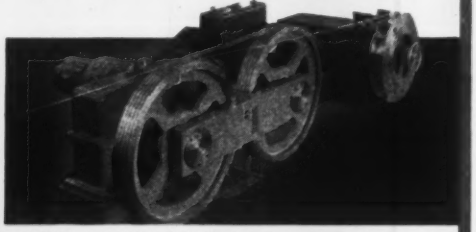
.204
TO
.101
.045
.265
12°
IN A SINGLE PASS AT 150 FPM
This is only one of 130 different sections that can be produced on the versatile Fenn line from a basic inventory of only 9 standard wire sizes.

This Fenn line accomplishes several important objectives, in both product and economics. Most important is its flexibility which permits the manufacture of 130 different bar sections from only 9 standard wire gauges . . . substantially reducing basic material inventories . . . and with better quality control. Stock savings alone will amortize its cost in a very reasonable length of time. The basic function of the line is to take coils of round copper wire and form it into a trapezoidal shape of precise tolerances and rewind it at the other end.

The line consists of a Pay-Off Reel, a Model 2U Turks Head mounted to a Model 084 Two-High 8" diameter Rolling Mill, a Model 1244 Wire Shaping Mill with Friction Two Roll Edger, a Model 42 Double Capstan, and a Model 1205 Hydraulic Traversing Take-Up Reel.

The installation of a Fenn line can also have important product and economic considerations in your plant. Write for full information or catalog.





ABOVE—Fenn Model 42 Double Capstan serves as power source for pulling bar stock through wire shaping mill.

LEFT—Fenn Model 1244 Shaping Mill with tandem mounted 4TH Turks Head incorporating shaped rolls.

THE FENN MANUFACTURING COMPANY • 403 FENN ROAD • NEWINGTON, CONNECTICUT

plant. Crown wants to devote all its attention to the packaging business and plans to diversify further in that area.

Makes High Purity Silicon

E. I. du Pont de Nemours & Co. Inc., Wilmington, Del., has been licensed by International Telephone & Telegraph Corp., New York, to manufacture a new grade of ultra-high-purity silicon. The process for making the material was developed by Standard Telecommunication Laboratories Ltd., London, England, an IT&T affiliate.

Structural Shapes . . .

Structural Shape Prices, Page 149

More structural fabricating contracts are being placed. Awards are widely distributed, reflecting the sharper competition brought about by the recession. On most projects, there are as many shops bidding for steelwork as there are general contractors. The latter are shopping for the lowest prices, delivery being a less important factor in the market.

Although inventories of standard shapes are substantial, the structural mills are booking more wide flange tonnage.

Bridges account for the bulk of the heavier estimating in the East, but there are some noteworthy jobs in other categories, including Kennecott Copper's mill buildings at Baltimore, which require 4320 tons, two stores taking 3300 tons, and hangars calling for 3000 tons.

At Pittsburgh, a district fabricator said: "We're getting more inquiries than we've had in a long time.

"Our backlog is down to four months, but we're still working two shifts, five days a week. A year ago, we had a 12-month backlog."

A strike of building labor in the Cleveland area is tying up construction there.

Higher prices are expected on structurals at midyear. That is stimulating some hedge buying. But the probable increase on plain material is not being reflected in higher quotations for steel in place. Some shops were holding prices close to the 1957 level until recently. Today, after losing tonnage on estimates, they are more competitive pricewise with the general market.

Tubular Goods . . .

Tubular Goods Prices, Page 153

Seasonal expansion in construction activities is stimulating the movement of merchant pipe, but, generally, the tubular goods market continues sluggish. Demand from the oil country is a little better, but it is still restricted, with drilling off sharply and users depending on inventories.

A Pittsburgh producer of mechanical tubing reports its sales this year are off 35 per cent from a year ago. "Business has been bumping along on about the same level for the last two and one-half months, and June doesn't look like it's going to be any better," he says.

Automotive inventories of mechanical tubing are down as low as 10 days' supply. No large auto orders are anticipated until late August.

Republic Steel's Gadsden, Ala., mill has booked an order for 133,000 tons of large diameter pipe.

Iron Ore . . .

Iron Ore Prices, Page 155

Shipments of Lake Superior iron ore from the head of the lakes in May totaled 4,060,611 gross tons, reports the American Iron Ore Association. That's down 8,667,048 tons from the 12,727,659 moved in May a year ago.

The cumulative movement in the 1958 shipping season to the end of May totals 4,123,171 tons, off 12,591,102 tons from the 16,714,273 moved up to the same date in the 1957 navigation season.

Quebec Cartier Mining Co., Montreal, Que., subsidiary of U. S. Steel Corp., is taking bids on a 193-mile railroad to be built alongside the access road from Port Cartier to Lac Jeannine, and also to construct a 60,000-hp hydroelectric plant on the Hart-Jaune River, in the St. Lawrence watershed, south of the company's main mining area in Saguenay County, Que.

Bids will be asked later for other portions of the mining project, including a deep-draft harbor and loading facilities at Port Cartier, near Shelter Bay, and the preparation of a large open pit mine and concentrator. In addition, two modern towns to accommodate about 5000 persons will be founded.

Exploration of the area was

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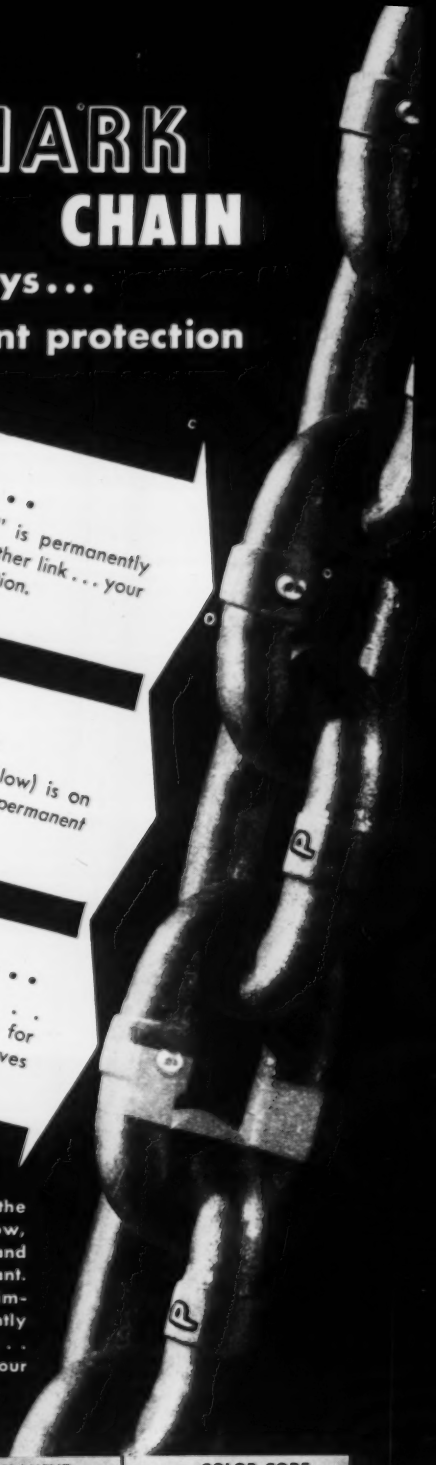

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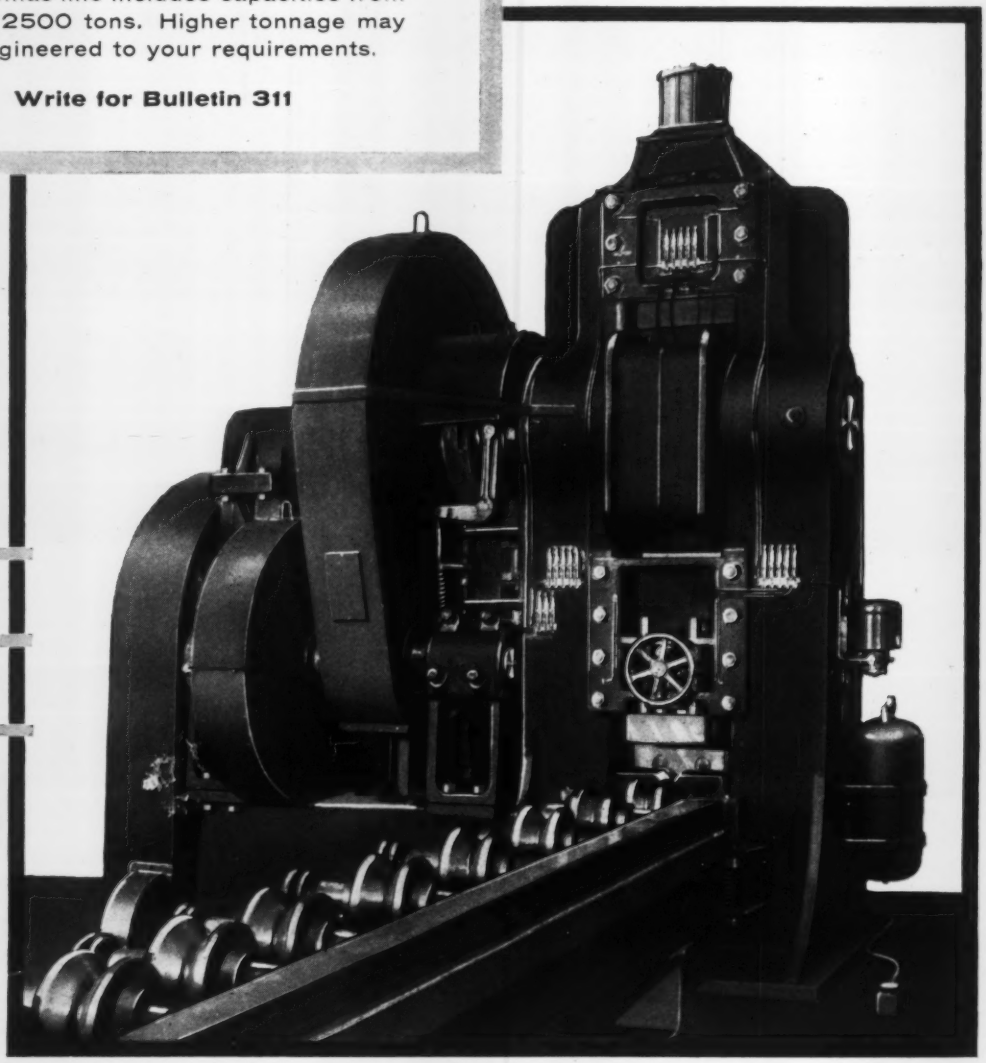

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PUNCHES

PRESSES

BENDERS

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started in 1952. Large deposits of low grade crude ore averaging about 30 per cent iron have been shown to exist. It is planned to construct a concentration mill at Lac Jeannine capable of producing 8 million tons of high grade concentrates annually. The company plans to market the ore in Europe and the U. S. as well as in Canada.

Still another ore mining project in Quebec's Ungava District near Labrador is that of the Steel Co. of Canada Ltd. and the Wabush Iron Co. Ltd. Those companies plan to spend about $250 million in developing their project, including the building of two towns, an iron ore concentrating plant, a powerplant, and shipping facilities on the St. Lawrence River. No specific date for starting the undertaking has been announced.

Ore Stocks Slip in Month

Stocks of iron ore in the U. S. and Canada totaled 49,628,458 gross tons at the beginning of May, reports the American Iron Ore Association. While the total is up sharply from that of a year ago (27,228,507), it is down noticeably from the 53,096,704 held at the start of April.

Lake Superior ore stocks (U. S.) were 31,577,844 tons, vs. 16,386,737 last year; other U. S. ores, 3,416,314, vs. 3,399,961; Canadian Lake Superior ores, 986,831, vs. 779,881; other Canadian ores, 4,766,117, vs. 2,521,932; foreign ores (other than Canadian) 8,881,352, vs. 4,139,996.

April consumption amounted to 6,351,682 tons, vs. 11,215,125 in the same month last year. In the first four months this year, 28,605,232 tons were consumed, against 46,048,201 in the corresponding period last year.

At the end of April, 151 out of 275 blast furnaces in the U. S. and Canada were operating. On the same date a year ago 252 stacks were blowing.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

4320 tons, mill buildings, Kennecott Copper Corp., Baltimore, to American Bridge Div., U. S. Steel Corp., Pittsburgh; M. W. Kellogg Co., New York, general contractor.

2200 tons, May Department Store, Jamaica, N. Y., to Grand Iron Work, New York; Walsh Construction Co., New York, general contractor.

1945 tons, state highway bridge, schedule No. 1, Perry-Dauphin Counties, Pennsylvania, to Phoenix Bridge Co., Phoenixville, Pa.; W. P. Dickerson & Son, Hollidaysburg, Pa., general contractor.

(*Please turn to Page* 146)

Iron Ore Statistics—April, 1958

(Gross tons)

Stocks at	U. S. Ores L. Superior	U. S. Ores Other	Canadian L. Superior	Canadian Other	Foreign Ores	Totals
U. S. Furnaces:						
Eastern	3,515,541	210,288	197,837	1,537,033	3,686,511	9,147,210
Pitts.-Youngstown	7,646,592	28,974	509,190	1,608,721	3,327,874	13,121,351
Cleveland-Detroit	7,743,736	130,881	142,160	279,118	313,204	8,609,099
Chicago	8,092,166	(a)	(a)	.....	(a)	8,092,166
Southern	(a)	2,272,346	.....	(a)	1,420,847	3,693,193
Western	.....	773,825	.....	.....	.....	773,825
Total	26,998,035	3,416,314	849,187	3,424,872	8,748,436	43,436,844
At U. S. Docks:						
Lake Erie	3,402,986	.....	113,505	989,529	.....	4,506,020
Other	.....	.....	.....	(a)	(a)	(a)
Total U. S. Stocks	30,401,021	3,416,314	962,692	4,414,401	8,748,436	47,942,864
Canadian Stocks	1,176,823	.....	24,139	351,716	132,916	1,685,594
Total U. S. & Canada	31,577,844	3,416,314	986,831	4,766,117	8,881,352	49,628,458

CONSUMPTION OF IRON ORE—APRIL, 1958

(Gross tons)

U. S. Districts:	U. S. Ores L. Superior	U. S. Ores Other	Canadian L. Superior	Canadian Other	Foreign Ores	Totals
Eastern	322,910	130,896	38,012	191,079	629,087	1,311,984
Pitts.-Youngstown	1,161,826	98,994	51,554	260,804	296,717	1,869,895
Cleveland-Detroit	416,839	17,205	104,580	6,556	24,999	570,179
Chicago	1,131,067	(a)	(a)	.....	(a)	1,131,067
Southern	(a)	420,418	.....	(a)	180,989	601,407
Western	.....	449,163	.....	.....	.....	449,163
In U. S.:						
Blast furnaces	2,550,552	847,898	133,411	301,348	410,002	4,243,211
Steel furnaces	90,887	51,307	686	11,375	268,914	423,169
Sintering (1)	346,162	217,456	60,049	145,716	452,817	1,222,200
Miscellaneous (2)	45,041	15	.....	.....	59	45,115
Total U. S.	3,032,642	1,116,676	194,146	458,439	1,678,096	5,933,695
In Canada:						
Blast furnaces	216,958	.....	43,529	49,743	.....	310,230
Steel furnaces	10,704	.....	.....	11,202	10,817	32,723
Sintering (1)	65,768	.....	.....	9,214	52	75,034
Miscellaneous (2)	.....	.....	.....	.....	.....	.....
Total Canada	293,430	.....	43,529	70,159	10,869	417,987
Total U. S. & Canada	3,326,072	1,116,676	237,675	528,598	1,142,661	6,351,682

(1) Consumed in sintering plants not located at mine sites.
(2) Sold to nonreporting companies or used for purposes not listed.
(a) Small tonnage included in other districts to avoid disclosure.
Data from the American Iron Ore Association and the American Iron & Steel Institute.

PUNCHES · DIES · RIVET SETS
COMPRESSION RIVETER DIES

Made to highest standard and uniform quality thus insuring maximum service.

Since 1903

Rivet sets—round, square, oblong Punches, and Dies carried in stock.

Write Dept. A for catalog 54 and new stock list.

GEO. F. MARCHANT COMPANY
1420-34 So. ROCKWELL STREET · CHICAGO 8, ILLINOIS

(Concluded from Page 145)

1340 tons, distributing warehouse, Western Electric Co., Winfield, Ill., to Allied Structural Steel Co., Chicago.

1240 tons, two hangars, Seaboard & Western, Idlewild, New York, to Lehigh Structural Steel Co., Allentown, Pa.; Turner Construction Co., New York, general contractor.

1100 tons, shopping center, Eatonton, N. J., R. H. Macy & Co., to Elizabeth Iron Works, Elizabeth, N. J., through Abbott-Merkt & Co., architect.

1015 tons, auditorium-theater, museum and fine arts building, Queens, New York, to Lehigh Structural Steel Co., Allentown, Pa.; Psaty & Furhman Co., New York, general contractor.

1000 tons, five state bridges, Middleboro, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; J. F. White Contracting Co., Westwood, Mass., general contractor; 265 tons, steel piles, Bethlehem Steel Co.

685 tons, addition, Cooper Hospital, Camden, N. J., to Robinson Steel Co., Philadelphia.

615 tons, auditorium and fine arts building, Howard University, Washington, D. C., to Southern Iron Works Inc., Washington; Irons & Reynolds Co. Inc., Washington, general contractor.

600 tons, viaduct structure, North Adams, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; J. F. Fitzgerald Construction Co., Canton, Mass., general contractor.

300 tons, research and development building, Leeds & Northrup Corp., Philadelphia, to Bethlehem Fabricators Inc., Bethlehem, Pa.

120 tons, grain storage elevator, Othello, Wash., and high school, Port Angeles, Wash., to Leckenby Structural Steel Co., Seattle.

100 tons, three-span composite WF beam bridge, Barre, Vt., to Bethlehem Steel Co., Bethlehem, Pa.; Olson Construction Co., Montpelier, Vt., general contractor; reinforcing bars, Vermont Structural Steel Co., Burlington, Vt.

STRUCTURAL STEEL PENDING

3550 tons, Woodrow Wilson Memorial Bridge, Potomac River, Alexandria, Va., and Prince George County, Maryland, superstructure, steel work and machinery, contract 3A; bids June 30, Bureau of Public Roads, Arlington, Va.; also, 515 tons of structural alloy steel and 225 tons of machinery; total 4090 tons, bids direct.

1400 tons, bascule bridge, including machinery, Westport, Mass.; Coleman Bros. Corp., Boston, low on the general contract.

945 tons, highway and five grade separation structures, Middletown, Conn.; O. & E. Construction Co. Inc., Whitestone, N. Y., is low on the general contract; also, 575 tons of reinforcing bars and 375 tons of highway mesh.

500 tons, also heavy piling, Anchorage, Alaska, deep sea terminal; bids in.

380 tons, railroad overpass, Portland, Oreg.; bids in to the state highway commission.

300 tons, students' union building, Gettysburg College, Gettysburg, Pa.

275 tons, building, State Teachers' College, Shippensburg, Pa.

180 tons, Oregon State highway project; bids in.

130 tons, two beam bridges, Mansfield-Willington-Coventry, Conn.; E. B. McGurk Inc., Hartford, Conn., low on general contract; also, 55 tons of reinforcing bars.

127 tons, College of Puget Sound, Tacoma, Wash.; bids in, under negotiation.

Unstated, service building, reactor testing station; James Stewart Co., Phoenix, Ariz., low at $1,385,000 to the Atomic Energy Commission, Idaho Falls, Idaho.

REINFORCING BARS . . .

REINFORCING BARS PLACED

815 tons, five state bridges, Middleboro, Mass., to Northern Steel Inc., Boston; J. F. White Contracting Co., Westwood, Mass., general contractor.

550 tons, state highway bridge, schedule No. 1, Perry-Dauphin Counties, Pennsylvania, to Taylor-Davis Inc., Philadelphia; W. P. Dickerson & Son, Hollidaysburg, Pa., general contractor.

500 tons, including structurals, addition, Memorial Hospital, Sarasota, Fla., to Florida Steel Products, Tampa, Fla. (reinforcing), and Decatur Steel & Iron Co. Inc., Decatur, Ala. (structurals); William A. Berbusse Jr. Inc., Palm Beach, Fla., general contractor.

400 tons, basic science life building, University of New Hampshire, Durham, N. H., to Northern Steel Inc., Boston; O. D. Purington Co. Inc., Providence, R. I., general contractor.

455 tons, auditorium and fine arts building, Howard University, Washington, D. C., to Ceco Steel Products Corp., Hillside, N. J.; Irons & Reynolds Co. Inc., Washington, general contractor.

350 tons, hospital building, Springfield, Mass., to Schere Steel Co., Hartford, Conn.; Daniel O'Connell's Sons Inc., Springfield, general contractor.

165 tons, nuclear reactor facilities, Watertown Arsenal, Watertown, Mass., to Northern Steel Inc., Boston; Vara Construction Co. Inc., Boston, general contractor; structural and plate work to Pittsburgh-Des Moines Steel Corp., Pittsburgh.

77 tons, Washington State bridge, Lewis County, to Bethlehem Pacific Coast Steel Corp., Seattle; Troy T. Burnham Co., Seattle, general contractor at $120,779.

REINFORCING BARS PENDING

1500 tons, University Properties construction, Seattle; bids in.

1500 tons, deep sea terminal, Anchorage, Alaska; bids in.

835 tons, including 370 tons of highway mesh, six grade separation structures; and reinforced concrete pavement, East Windsor-Enfield, Conn.; bids June 9, Hartford, Conn.; also 996 tons, fabricated structural steel.

130 tons, highway mesh, reinforced concrete pavement, North Haven-Wallingford, Conn.

115 tons, Washington State highway bridges, Douglas-Chelan Counties; bids to Olympia, Wash., June 17.

110 tons, Washington State highway projects, Lewis and Spokane Counties; bids to Olympia, Wash., June 17.

100 tons or more, two bridges, Pacific County, Washington; general contract to Quigg Bros.-McDonald Inc., Hoquiam, Wash., low at $388,440.

100 tons, reinforced concrete structure, Etna Borough, Allegheny County, Pennsylvania; bids June 13, Harrisburg, Pa.

100 tons, substructure, Scudders Falls Bridge, Delaware River, Ewing Township, N. J.; bids June 17, Trenton, N. J.; also 3390 lineal feet, steel piling.

100 tons, Washington State girder bridge, Lewis County; general contract to J. A. Troxell, Seattle, low at $59,823.

45 tons, also piling, pipe, etc., bids to Moses Lake, Wash., June 10.

PLATES . . .

PLATES PLACED

500 tons, fuel storage facilities, Adak, Alaska, military installation; plate fabrication sublet to an unstated interest; general contract to P.O.L. Contractors, Anchorage, Alaska, at $1,266,571.

500 tons or more, fuel tanks, Larson Air Base, Washington State, to an unstated Dallas fabricator; general contract to Leslie Miller Inc., Ft. Worth, Tex., at $1,446,184.

PLATES PENDING

Unstated, fuel storage tanks, Glasgow Air Base, Montana; postponed to June 10 from June 5.

PIPE . . .

CAST IRON PIPE PLACED

1365 tons, 16 to 4 in., Mercer Island Water District, Washington State, to U. S. Pipe & Foundry Co., Seattle.

CAST IRON PIPE PENDING

1055 tons, 20 in. supply pipe; bids to Seattle, June 4.

100 tons, 16 in.; bids in to Auburn, Wash.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Brazil, fifteen 45-ton and two 65-ton diesels to the International General Electric Co.; to be built at Erie, Pa.

RAILROAD CARS PLACED

Argentina, 287 standard gage stone ballast hoppers to the American Car & Foundry Div., ACF Industries, New York.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

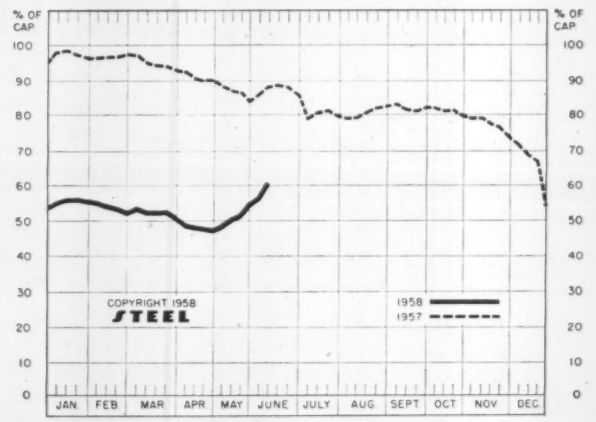
	Week Ended June 8	Change	Same 1957	Week 1956
Pittsburgh	57.5	+ 2.5*	87.5	99
Chicago	68.5	+ 4.5*	89.5	99.5
Mid-Atlantic	58	+ 9	94	98
Youngstown	49	+ 4	70	101
Wheeling	74	+ 0.5	92.5	100.5
Cleveland	35.5	+ 0.5*	88	99
Buffalo	53.5	+ 7	95	105
Birmingham	67	+ 0.5	92.5	23.5
New England	40	0	55	89
Cincinnati	61	— 2*	93	94.5
St. Louis	97	+ 10*	89.5	95
Detroit	65	+ 7.5*	96	95
Western	71	— 1*	100	106
National Rate	60.5	+ 4	88	96.5

INGOT PRODUCTION‡

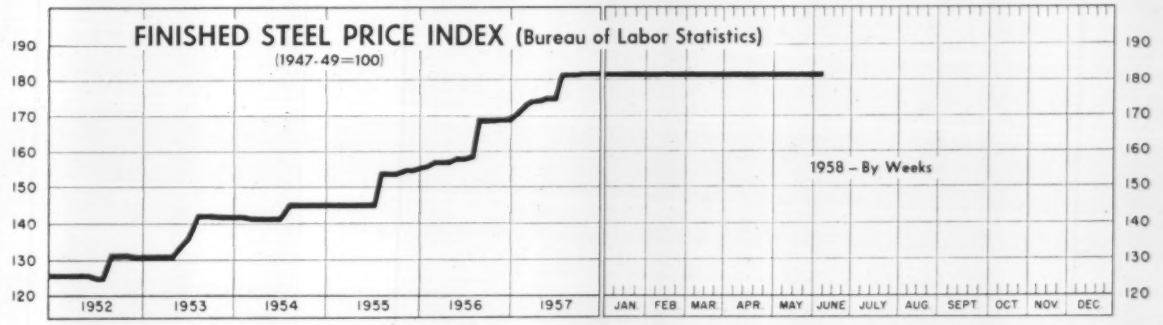
	Week Ended June 8	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	102.2†	97.5	83.0	139.4
NET TONS (In thousands)	1,641†	1,567	1,334	2,240

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



June 3, 1958	Week Ago	Month Ago	May Avg	Year Ago
181.6	181.6	181.6	181.6	174.3

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended June 3

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.600
Rails, Light, 40 lb	7.067
Tie Plates	6.600
Axles, Railway	9.825
Wheels, Freight Car, 33 in. (per wheel)	60.000
Plates, Carbon	6.150
Structural Shapes	5.942
Bars, Tool Steel, Carbon (lb)	0.535
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.650
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.355
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.850
Bars, H.R., Alloy	10.525
Bars, H.R., Stainless, 303 (lb)	0.525
Bars, H.R., Carbon	6.425
Bars, Reinforcing	6.135
Bars, C.F., Carbon	10.360
Bars, C.F., Alloy	13.875
Bars, C.F., Stainless, 302 (lb)	0.553
Sheets, H.R., Carbon	6.192
Sheets, C.R., Carbon	7.089
Sheets, Galvanized	8.270
Sheets, C.R., Stainless, 302 (lb)	0.688
Sheets, Electrical	12.025
Strip, C.R., Carbon	9.243
Strip, C.R., Stainless, 430 (lb)	0.493
Strip, H.R., Carbon	6.095
Pipe, Black, Buttweld (100 ft)	19.814
Pipe, Galv., Buttweld (100 ft)	23.264
Pipe, Line (100 ft)	199.023
Casing, Oil Well, Carbon (100 ft)	194.499
Casing, Oil Well, Alloy (100 ft)	304.610
Tubes, Boiler (100 ft)	49.130
Tubing, Mechanical, Carbon (100 ft)	24.953
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
Black Plate, Canmaking Quality (95 lb base box)	7.583
Wire, Drawn, Carbon	10.225
Wire, Drawn, Stainless, 430 (lb)	0.653
Bale Ties (bundles)	7.967
Nails, Wire, 8d Common	9.828
Wire, Barbed (80-rod spool)	8.719
Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	June 4 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	239.15	239.15	239.15	228.59	182.82
Index in cents per lb	6.479	6.479	6.479	6.193	4.953

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$145.42	$145.42	$145.42	$140.24	$111.28
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	64.70	55.04
Basic Pig Iron, GT	65.99	65.99	65.99	64.23	54.66
Malleable Pig Iron, GT	67.27	67.27	67.27	65.77	55.77
Steelmaking Scrap, GT	36.17	34.50	32.00	52.33	39.50

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	June 4 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.425	5.425	5.425	5.075	3.95
Bars, H.R., Chicago	5.425	5.425	5.425	5.075	3.95
Bars, H.R., deld. Philadelphia	5.725	5.725	5.725	5.365	4.502
Bars, C.F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	4.925
Shapes, Std., Pittsburgh	5.275	5.275	5.275	5.00	3.85
Shapes, Std., Chicago	5.275	5.275	5.275	5.00	3.85
Shapes, deld. Philadelphia	5.545	5.545	5.545	5.31	4.13
Plates, Pittsburgh	5.10	5.10	5.10	4.85	3.90
Plates, Chicago	5.10	5.10	5.10	4.85	3.90
Plates, Coatesville, Pa.	5.10	5.10	5.10	5.25	4.35
Plates, Sparrows Point, Md.	5.10	5.10	5.10	4.85	3.90
Plates, Claymont, Del.	5.10	5.10	5.10	5.70	4.35
Sheets, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.775
Sheets, H.R., Chicago	4.925	4.925	4.925	4.675	3.775
Sheets, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Chicago	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Detroit	6.05-6.15	6.05-6.15	6.05-6.15	5.75-5.85	4.775
Sheets, Galv., Pittsburgh	6.60	6.60	6.60	6.30	5.075
Strip, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.975-4.225
Strip, H.R., Chicago	4.925	4.925	4.925	4.675	3.725
Strip, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.10-5.80
Strip, C.R., Chicago	7.15	7.15	7.15	6.85	5.35
Strip, C.R., Detroit	7.25	7.25	7.25	6.95	5.30-6.05
Wire, Basic, Pittsburgh	7.65	7.65	7.65	7.20	5.225-5.475
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.49	6.35
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$96.00	$96.00	$96.00	$91.50	$70.50
Wire rods, ¼-⅝" Pitts.	6.15	6.15	6.15	5.80	4.425

PIG IRON, Gross Ton	June 4 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$65.50	$55.50
Basic, Valley	66.00	66.00	66.00	64.50	54.50
Basic, deld., Phila.	70.41	70.41	70.41	68.38	59.25
No. 2 Fdry, NevilleIsland, Pa.	66.50	66.50	66.50	65.00	55.00
No. 2 Fdry, Chicago	66.50	66.50	66.50	65.00	55.00
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	68.88	59.75
No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	51.38
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	66.70	58.93
Malleable, Valley	66.50	66.50	66.50	65.00	55.00
Malleable, Chicago	66.50	66.50	66.50	65.00	55.00
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00†	200.00*

†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$36.50	$34.50	$31.50	$51.00	$39.50
No. 1 Heavy Melt, E. Pa.	34.50	34.50	34.50	56.50	41.50
No. 1 Heavy Melt, Chicago	37.50	34.50	30.00	49.50	37.50
No. 1 Heavy Melt, Valley	36.50	36.50	33.50	52.50	41.50
No. 1 Heavy Melt, Cleve.	33.00	33.00	30.50	49.50	39.00
No. 1 Heavy Melt, Buffalo	26.50	26.50	26.50	40.50	40.75
Rails, Rerolling, Chicago	56.50	53.50	49.00	62.50	47.50
No. 1 Cast, Chicago	41.50	41.50	38.50	46.50	38.00

COKE, Net Ton					
Beehive, Furn., Connisvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connisvl.	18.25	18.25	18.25	18.00	17.00

Where we stand in the fight against CANCER ...and why your dollars are urgently needed now!

DECISIVE PROGRESS has been made in the fight against cancer in the last decade. Today one in every three persons who have cancer is saved. A few years ago it was only one in four.

Still more lives can be saved with what doctors know *now*, if all adults will have a health checkup every year. Many cancers are curable if discovered early and treated promptly.

The major hope for the future conquest of cancer lies in research. About twenty million Americans living today are marked for death from cancer unless research finds new means of curing the disease, or preventing its onset.

What new knowledge has been won to brighten cancer's darkness? High on the list is the discovery of chemicals which cause some cancers to shrink . . . and put victims of this disease back on their feet for a time. There are sound, scientific reasons to believe that more effective chemicals will come which may possibly *cure* one or more forms of cancer.

Equally remarkable are the advances in surgery for cancer . . . permitting wider removal of malignant growths with less risk to patients and far greater chances to control the disease.

The scoreboard of cancer progress also includes methods for treating some cancers with hormones, which prolong the active, useful lives of many patients . . . tests for early diagnosis of some common forms of cancer . . . development of X rays with power undreamed of 10 years ago . . . incredibly delicate techniques by which the living chemistry of a single body cell can be studied.

Immense new research projects are under way and might be expanded to answer such questions as:

> Are the tiny organisms called viruses significant factors in the cause of cancer in man, as they are in some cancers in animals? Why do cancers grow rapidly in some patients, slowly in others? If some people are immune or more immune to cancer than others, how can that immunity be strengthened? What elements in our environment may be causing cancer?

Important findings must be moved from the laboratory table to the hospital bed. The step from test tube to patient is difficult, time-consuming and costly. As research goes forward, and new leads open up, more and more work will be done directly with patients with cancer. Thus, research costs will snowball as science continues to press towards its goal.

Your support of the American Cancer Society's Crusade has already brought significant gains in the control of cancer. More lie ahead . . . will you make them possible? Let your dollars work for you and for your children and for their children.

Send your check today to "Cancer," in care of your local post office.

AMERICAN CANCER SOCIETY

Fight CANCER with a checkup and a check

Steel Prices

Mill prices as reported to STEEL, June 4, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key to producers, page 150; to footnotes, page 152.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$73.50

INGOTS, Alloy (NT)
Detroit S41 .....$77.00
Farrell,Pa. S3 .....77.00
Lowellville, O. S3 ....77.00
Midland,Pa. C18 ....77.00
Munhall,Pa. U5 .....77.00
Sharon,Pa. S3 .....77.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$77.50
Buffalo R2 .....77.50
Clairton,Pa. U5 .....77.50
Ensley,Ala. T2 .....77.50
Fairfield,Ala. T2 ....77.50
Fontana,Calif. K1 ....88.00
Gary,Ind. U5 .....77.50
Johnstown,Pa. B3 ....77.50
Lackawanna,N.Y. B2 ..77.50
Munhall,Pa. U5 .....77.50
Owensboro,Ky. G8 ....77.50
S.Chicago,Ill. R2, U5..77.50
S. Duquesne,Pa. U5 ...77.50
Sterling,Ill. N15 .....77.50
Youngstown R2 .....77.50

Carbon, Forging (NT)
Bessemer,Pa. U5 .....$96.00
Buffalo R2 .....96.00
Canton,O. R2 .....98.50
Clairton,Pa. U5 .....96.00
Conshohocken,Pa. A3..101.00
Ensley,Ala. T2 .....96.00
Fairfield,Ala. T2 .....96.00
Fontana,Calif. K1 ....105.50
Gary,Ind. U5 .....96.00
Geneva,Utah C11 .....96.00
Houston S5 .....101.00
Johnstown,Pa. B2 .....96.00
Lackawanna,N.Y. B2 ..96.00
Los Angeles B3 .....105.50
Midland,Pa. C18 .....96.00
Munhall,Pa. U5 .....96.00
Owensboro,Ky. G8 ....96.00
Seattle B3 .....109.50
Sharon,Pa. S3 .....96.00
S.Chicago R2, U5, W14 96.00
S.Duquesne,Pa. U5 ...96.00
S.SanFrancisco B3 ...105.50
Warren,O. C17 .....96.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ..$114.00
Bridgeport,Conn. C32 .114.00
Buffalo R2 .....114.00
Canton,O. R2, T7 ....114.00
Conshohocken,Pa. A3 .121.00
Detroit S41 .....114.00
Economy,Pa. B14 .....114.00
Farrell,Pa. S3 .....114.00
Fontana,Calif. K1 ....135.00
Gary,Ind. U5 .....114.00
Houston S5 .....119.00
Ind.Harbor,Ind. Y1 ....114.00
Johnstown,Pa. B2 .....114.00
Lackawanna,N.Y. B2 .114.00
LosAngeles B3 .....134.00
Lowellville,O. S3 .....114.00
Massillon,O. R2 .....114.00
Midland,Pa. C18 .....114.00
Munhall,Pa. U5 .....114.00
Owensboro,Ky. G8 ....114.00
Sharon,Pa. S3 .....114.00
S.Chicago R2,U5,W14 .114.00
S.Duquesne,Pa. U5 ...114.00
Struthers,O. Y1 .....114.00
Warren,O. C17 .....114.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$117.50
Canton,O. R2 .....120.00
Cleveland R2 .....117.50
Gary,Ind U5 .....117.50
S.Chicago,Ill. R2, W14 117.50
S.Duquesne,Pa. U5 ...117.50
Warren,O. C17 .....117.50

SKELP
Aliquippa,Pa. J5 ....5.075
Munhall,Pa. U5 .....4.875
Pittsburgh J5 .....5.075
Warren,O. R2 .....4.875
Youngstown R2, U5 ..4.875

WIRE RODS
AlabamaCity,Ala. R2 ...6.15
Aliquippa,Pa. J5 .....6.15
Alton,Ill. L1 .....6.35
Buffalo W12 .....6.15
Cleveland A7 .....6.15
Donora,Pa. A7 .....6.15
Fairfield,Ala. T2 .....6.15
Houston S5 .....6.40
IndianaHarbor,Ind. Y1 ..6.15
Johnstown,Pa. B2 .....6.15
Joliet,Ill. A7 .....6.15
KansasCity,Mo. S5 ....6.40
Kokomo,Ind. C16 .....6.25
LosAngeles B3 .....6.95
Minnequa,Colo. C10 ....6.40
Monessen,Pa. P7 .....6.15
N.Tonawanda,N.Y. B11 ..6.15
Pittsburg,Calif. C11 ....6.95
Portsmouth,O. P12 ....6.15
Roebling,N.J. R5 .....6.25
S.Chicago,Ill. R2 .....6.15
SparrowsPoint,Md. B2 ..6.25
Sterling,Ill.(1) N15 ....6.15
Sterling,Ill. N15 .....6.25
Struthers,O. Y1 .....6.15
Worcester,Mass. A7 ....6.45

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.275
Atlanta A11 .....5.475
Aliquippa,Pa. J5 .....5.275
Bessemer,Ala. T2 .....5.275
Bethlehem,Pa. B2 .....5.325
Birmingham C15 .....5.275
Clairton,Pa. U5 .....5.275
Fairfield,Ala. T2 .....5.275
Fontana,Calif. K1 ....6.075
Gary,Ind. U5 .....5.275
Geneva,Utah C11 .....5.275
Houston S5 .....5.375
Ind.Harbor,Ind. I-2 ...5.275
Johnstown,Pa. B2 .....5.325
Joliet,Ill. P22 .....5.275
KansasCity,Mo. S5 ....5.375
Lackawanna,N.Y. B2 ..5.325
LosAngeles B3 .....5.975
Minnequa,Colo. C10 ...5.575
Munhall,Pa. U5 .....5.275
Niles,Calif. P1 .....5.925
Phoenixville,Pa. P4 ...5.325
Portland,Oreg. O4 ....6.025
Seattle B3 .....6.025
S.Chicago,Ill. U5, W14 5.275
S.SanFrancisco B3 ....5.925
Sterling,Ill. N15 .....5.275
Torrance,Calif. C11 ...5.975
Weirton,W.Va. W6 ....5.275

Wide Flange
Bethlehem,Pa. B2 .....5.325
Clairton,Pa. U5 .....5.275
Fontana,Calif. K1 .....6.225
IndianaHarbor,Ind. I-2 5.275
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
Phoenixville,Pa. P4 ...5.325
S.Chicago,Ill. U5 .....5.275
Weirton,W.Va. W6 .....5.275

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.65
KansasCity,Mo. S5 ....6.65
Munhall,Pa. U5 .....6.55
S.Chicago,Ill U5 .....6.55

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 .....7.75
Bessemer,Ala. T2 .....7.75
Bethlehem,Pa. B2 .....7.80
Clairton,Pa. U5 .....7.75
Fairfield,Ala. T2 .....7.75
Fontana,Calif. K1 .....8.55
Gary,Ind. U5 .....7.75
Geneva,Utah C11 .....7.75
Houston S5 .....7.85
Ind.Harbor,Ind. I-2, Y1 7.75
Johnstown,Pa. B2 .....7.80
KansasCity,Mo. S5 ....7.85
Lackawanna,N.Y. B2 ..7.80
LosAngeles B3 .....8.45
Munhall,Pa. U5 .....7.75
Seattle B3 .....8.50
S.Chicago,Ill. U5, W14 .7.75
S.SanFrancisco B3 ....8.40
Struthers,O. Y1 .....7.75

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....7.80
Lackawanna,N.Y. B2 ..7.80
Munhall,Pa. U5 .....7.75
S.Chicago,Ill. U5 .....7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 .....5.325
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
S.Chicago,Ill. U5 .....5.275

STEEL SHEET PILING
Lackawanna,N.Y. B2 ..6.225
Munhall,Pa. U5 .....6.225
S.Chicago,Ill. U5 .....6.225
Weirton,W.Va. W6 .....6.225

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ...5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(15) A10 ...5.10
Atlanta A11 .....5.30
Bessemer,Ala. T2 .....5.10
Clairton,Pa. U5 .....5.10
Claymont,Del. C22 .....5.10
Cleveland J5, R2 .....5.20
Coatesville,Pa. L7 .....5.10
Conshohocken,Pa. A3 ...5.10
Ecorse,Mich. G5 .....5.20
Fairfield,Ala. T2 .....5.10
Fontana,Calif.(30) K1 ..5.90
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.10
GraniteCity,Ill. G4 .....5.20
Harrisburg,Pa. P4 ....5.10
Houston S5 .....5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Johnstown,Pa. B2 .....5.10
Lackawanna,N.Y. B2 ...5.10
LoneStar,Tex. L6 .....5.20
Mansfield,O. E6 .....5.10
Minnequa,Colo. C10 ....5.95
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Pittsburgh J5 .....5.10
Riverdale,Ill. A1 .....5.10
Seattle B3 .....6.00
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Sterling,Ill. N15 .....5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Youngstown U5, Y1 .....5.10

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....6.75
Fontana,Calif. K1 .....7.55
Geneva,Utah C11 .....6.75
Houston S5 .....6.85
Johnstown,Pa. B2 .....6.75
SparrowsPoint,Md. B2 ..6.75

PLATES, Wrought Iron
Economy,Pa. B14 ....13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 .....7.625
Bessemer,Ala. T2 .....7.625
Clairton,Pa. U5 .....7.625
Claymont,Del. C22 .....7.625
Cleveland J5, R2 .....7.625
Coatesville,Pa. L7 .....7.625
Conshohocken,Pa. A3 ..7.625
Economy,Pa. B14 .....7.625
Ecorse,Mich. G5 .....7.725
Fairfield,Ala. T2 .....7.625
Farrell,Pa. S3 .....7.625
Fontana,Calif.(30) K1 8.425
Gary,Ind. U5 .....7.625
Geneva,Utah C11 .....7.625
Houston S5 .....7.725
Ind.Harbor,Ind. I-2, Y1.7.625
Johnstown,Pa. B2 .....7.625
Munhall,Pa. U5 .....7.625
Pittsburgh J5 .....7.625
Seattle B3 .....8.525
Sharon,Pa. S3 .....7.625
S.Chicago,Ill. U5, W14 .7.625
SparrowsPoint,Md. B2 ..7.625
Warren,O. R2 .....7.625
Youngstown U5 .....7.625

PLATES, ALLOY
Aliquippa,Pa. J5 .....7.20
Claymont,Del. C22 .....7.20
Coatesville,Pa. L7 .....7.20
Economy,Pa. B14 .....7.20
Fontana,Calif. K1 .....8.00
Gary,Ind. U5 .....7.20
Houston S5 .....7.30
Ind.Harbor,Ind. Y1 .....7.20
Johnstown,Pa. B2 .....7.20
Lowellville,O. S3 .....7.20
Munhall,Pa. U5 .....7.20
Newport,Ky. A2 .....7.20
Pittsburgh J5 .....7.20
Seattle B3 .....8.10
Sharon,Pa. S3 .....7.20
S.Chicago,Ill. U5, W14 ..7.20
SparrowsPoint,Md. B2 ..7.20
Youngstown Y1 .....7.20

FLOOR PLATES
Cleveland J5 .....6.175
Conshohocken,Pa. A3 ...6.175
Ind.Harbor,Ind. I-2 ...6.175
Munhall,Pa. U5 .....6.175
S.Chicago,Ill. U5 .....6.175

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.35
Ashland l.c.l.(15) A10 ..5.85
Cleveland c.l. R2 .....5.85
Warren,O. c.l. R2 .....5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ...5.425
Aliquippa,Pa.(9) J5 ...5.425
Alton,Ill. L1 .....5.625
Atlanta(9) A11 .....5.625
Bessemer,Ala.(9) T2 ..5.425
Birmingham(9) C15 ....5.425
Buffalo(9) R2 .....5.425
Clairton,Pa.(9) U5 ....5.425
Cleveland (9) R2 ....5.425
Ecorse,Mich.(9) G5 ...5.525
Emeryville,Calif. J7 ...6.175
Fairfield,Ala.(9) T2 ...5.425
Fairless,Pa.(9) U5 ....5.575
Fontana,Calif.(9) K1 ...6.125
Gary,Ind.(9) U5 .....5.425
Houston(9) S5 .....5.675
Ind.Harbor(9) I-2, Y1..5.425
Johnstown,Pa.(9) B2 ...5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo.(9) S5..6.675
Lackawanna(9) B2 .....5.425
LosAngeles(9) B3 .....6.125
Midland,Pa.(23) C18 ...5.725
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
N.T'wanda,N.Y.(23)B11 5.775
Owensboro,Ky.(9) G8 ...5.425
Pittsburg,Calif.(9) C11..6.125
Pittsburgh(9) J5 .....5.425
Portland,Oreg. O4 .....6.175
Seattle B3, N14 .....6.175
S.Ch'c'go(9)R2,U5,W14 5.425
S.Duquesne,Pa.(9) U5..5.425
S.SanFran.,Calif.(9)B3 6.175
Sterling,Ill.(1)(9) N15..5.425
Sterling,Ill.(9) N15 ...5.525
Struthers,O.(9) Y1 ....5.425
Tonawanda,N.Y. B12 ...5.425
Torrance,Calif.(9) C11 .6.125
Youngstown(9)R2, U5..5.425

BARS, H.R. Leaded Alloy
(Including leaded extra)
Warren,O. C17 .....7.475

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.475
Bethlehem,Pa. B2 .....6.475
Bridgeport,Conn. C32 ...6.55
Buffalo R2 .....6.475
Canton,O. R2, T7 .....6.475
Clairton,Pa. U5 .....6.475
Detroit S41 .....6.475
Economy,Pa. B14 .....6.475
Ecorse,Mich. G5 .....6.575
Fairless,Pa. U5 .....6.625
Farrell,Pa. S3 .....6.475
Fontana,Calif. K1 .....7.525
Gary,Ind. U5 .....6.475
Houston S5 .....6.725
Ind.Harbor,Ind.I-2, Y1.6.475
Johnstown,Pa. B2 .....6.475
KansasCity,Mo. S5 ....6.725
Lackawanna,N.Y. B2 ..6.475
Lowellville,O. S3 .....6.475
LosAngeles B3 .....7.525
Massillon,O. R2 .....6.475
Midland,Pa. C18 .....6.475
Owensboro,Ky. G8 .....6.475
Pittsburgh J5 .....6.475
Sharon,Pa. S3 .....6.475
S.Chicago R2, U5, W14 6.475
S.Duquesne,Pa. U5 ....6.475
Struthers,O. Y1 .....6.475
Warren,O. C17 .....6.475
Youngstown U5 .....6.475

BARS & SMALL SHAPES, H.R.
High-Strength, Low-Alloy
Aliquippa, Pa. J5 .....7.925
Bessemer,Ala T2 .....7.925
Bethlehem,Pa. B2 .....7.925
Clairton,Pa. U5 .....7.925
Cleveland, R2 .....7.925
Ecorse,Mich. G5 .....8.025
Fairfield,Ala. T2 .....7.925
Fontana,Calif. K1 .....8.625
Gary,Ind. U5 .....7.925
Houston S5 .....8.175
Ind.Harbor,Ind. Y1 .....7.925
Johnstown,Pa. B2 .....7.925
KansasCity,Mo. S5 ....8.175
Lackawanna,N.Y. B2 ..7.925
LosAngeles B3 .....8.625
Pittsburgh J5 .....7.925
Seattle B3 .....8.675
S.Chicago,Ill. U5, W14..7.925
S.SanFrancisco B3 ....8.675
Struthers,O. Y1 .....7.925
Youngstown U5 .....7.925

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.575
Houston(9) S5 .....5.675
KansasCity,Mo.(9) S5..5.675
Lackawanna(9) B2 .....5.425
Sterling,Ill. N15 .....5.525
Sterling,Ill.(1) N15 ...5.425
Tonawanda,N.Y. B12 ...5.425

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....5.425
Atlanta A11 .....5.625
Joliet,Ill. P22 .....5.425
Niles,Calif. P1 .....6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 .....6.175
SanFrancisco S7 .....6.275
Seattle B3 .....6.175

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.80
KansasCity,Mo. S5 ....6.80
Pittsburgh J5 .....6.55
Youngstown U5 .....6.55

BARS, C.F., Leaded Alloy
(Including leaded extra)
Ambridge,Pa. W18 ....9.925
BeaverFalls,Pa. M12 ...9.925
Camden,N.J. P13 .....10.10
Chicago W18 .....9.925
Cleveland C20 .....9.925*
Elyria,O. W8 .....9.925
LosAngeles P2, S30..11.40*
Monaca,Pa. S17 .....9.925
Newark,N.J. W18 ....10.10
SpringCity,Pa. K3 .....10.10
Warren,O. C17 .....9.925

*Grade A; add 0.50c for Grade B.

BARS, Cold-finished Carbon
Ambridge,Pa. W18 ....7.30
BeaverFalls,Pa. M12,R2 7.30
Birmingham C15 .....7.90
Buffalo B5 .....7.35
Camden,N.J. P13 .....7.75
Carnegie,Pa. C12 .....7.30
Chicago W18 .....7.30
Cleveland A7, C20 .....7.30
Detroit B5, P17 .....7.50
Detroit S41 .....7.30
Donora,Pa. A7 .....7.30
Elyria,O. W8 .....7.30
FranklinPark,Ill. N5 ...7.30
Gary,Ind. R2 .....7.30
GreenBay,Wis. F7 .....7.30
Hammond,Ind. J5, L2 ...7.30
Hartford,Conn. R2 .....7.80
Harvey,Ill. B5 .....7.30
LosAngeles(49) S30 ....8.75
LosAngeles P2, R2 ....8.75
Mansfield,Mass. B5 ....7.85
Massillon,O. R2, R8 ....7.30
Midland,Pa. C18 .....7.30
Monaca,Pa. S17 .....7.30
Newark,N.J. W18 .....7.75
NewCastle,Pa.(17) B4 ...7.30
Pittsburgh J5 .....7.30
Plymouth,Mich. P5 .....7.75
Putnam,Conn. W18 .....7.85
Readville,Mass. C14 ....7.85
S.Chicago,Ill. W14 .....7.30
SpringCity,Pa. K3 .....7.75
Struthers,O. Y1 .....7.30
Warren,O. C17 .....7.30
Willimantic,Conn. J5 ....7.80
Waukegan,Ill. A7 .....7.30
Youngstown F3, Y1 ....7.30

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....8.775
BeaverFalls,Pa. M12,R2 8.775
Bethlehem,Pa. B2 .....8.775
Bridgeport,Conn. C32 .8.925
Buffalo B5 .....8.775
Camden,N.J. P13 .....8.95
Canton,O. T7 .....8.775
Carnegie,Pa. C12 .....8.775
Chicago W18 .....8.775
Cleveland A7, C20 ....8.775
Detroit B5, P17 .....8.975
Detroit S41 .....8.775
Donora,Pa. A7 .....8.775
Elyria,O. W8 .....8.775
FranklinPark,Ill. N5 ...8.775
Gary,Ind. R2 .....8.775
GreenBay,Wis. F7 .....8.775
Hammond,Ind. J5, L2..8.775
Hartford,Conn. R2 .....9.075
Harvey,Ill. B5 .....8.775
Lackawanna,N.Y. B2 ...8.775
LosAngeles P2, S30 ....10.75
Mansfield,Mass. B5 ....9.075
Massillon,O. R2, R8 ....8.775
Midland,Pa. C18 .....8.775
Monaca,Pa. S17 .....8.775
Newark,N.J. W18 .....8.95
Plymouth,Mich. P5 .....8.975
S.Chicago,Ill. W14 .....8.775
SpringCity,Pa. K3 .....8.95
Struthers,O. Y1 .....8.775
Warren,O. C17 .....8.775
Waukegan,Ill. A7 .....8.775
Willimantic,Conn. J5 ....9.075
Worcester,Mass. A7 ....9.075
Youngstown F3, Y1 ....8.775

BARS, Reinforcing (To Fabricators)

AlabamaCity,Ala. R2 ..5.425
Atlanta A11 .....5.425
Birmingham C15 .....5.425
Buffalo R2 .....5.425
Cleveland R2 .....5.425
Ecorse,Mich. G5 .....5.775
Emeryville,Calif. J7 ..6.175
Fairfield,Ala. T2 .....5.425
Fairless,Pa. U5 .....5.575
Fontana,Calif. K1 ....6.125
Ft.Worth,Tex.(4)(26)T4 5.875
Gary,Ind. U5 .....5.425
Houston S5 .....5.675
Ind.Harbor,Ind. I-2, Y1 5.425
Johnstown,Pa. B2 ....5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo. S5 ....5.675
Kokomo,Ind. C16 .....5.525
Lackawanna,N.Y. B2 ..5.425
LosAngeles B3 .....6.125
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
Pittsburg,Calif. C11 ...6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.175
S.Chicago,Ill. R2 .....5.425
S.Duquesne,Pa. U5 ....5.425
S.SanFrancisco B3 ....6.175
SparrowsPoint,Md. B2..5.425
Sterling,Ill.(1) N15 ...5.425
Sterling,Ill. N15 .....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ..6.00
Torrance,Calif. C11 ...6.125
Youngstown R2, U5 ..5.425

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2, U8 .....7.65
Chicago U8 .....6.91
Cleveland U8 .....6.89
Houston S5 .....7.35
Johnstown,Pa. B2 .....7.08
KansasCity,Mo. S5 ....7.35
Lackawanna,N.Y. B2 ...6.85
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.55
Philadelphia U8 .....7.38
Pittsburgh J5, U8 .....7.10
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.70
SparrowsPt.,Md. B2 ....7.08
St.Paul U8 .....7.92
Williamsport,Pa. S19 ..7.00

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 .18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2.5.325
ChicagoHts.(4)(44) I-2.5.425
ChicagoHts.(4) C2 ....5.425
Franklin,Pa.(3) F5 ...5.325
Franklin,Pa.(4) F5 ....5.425
JerseyShore,Pa. (3) J8 ..5.30
Marion,O.(3) P11 ....5.325
Tonawanda(3) B12 ...5.325
Tonawanda(4) B12 ....6.00
Williamsport,Pa.(3) S19.5.50

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..4.925
Allenport,Pa. P7 .....4.925
Ashland,Ky.(8) A10 ..4.925
Cleveland J5, R2 .....4.925
Conshohocken,Pa. A3 ..4.975
Detroit(8) M1 .....5.025
Ecorse,Mich. G5 .....5.025
Fairfield,Ala. T2 .....4.925
Fairless,Pa. U5 .....4.975
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.925
Geneva,Utah C11 .....5.025
GraniteCity,Ill.(8) G4 5.025
Ind.Harbor,Ind. I-2, Y1 4.925
Irvin,Pa. U5 .....4.925
Lackawanna,N.Y. B2 ..4.925
Mansfield,O. E6 .....4.925
Munhall,Pa. U5 .....4.925
Newport,Ky.(8) A2 ....4.925
Niles,O. M21, S3 .....4.925
Pittsburg,Calif. C11 ...5.625
Pittsburgh J5 .....4.925
Portsmouth,O. P12 ....4.925
Riverdale,Ill. A1 .....4.925
Sharon,Pa. S3 .....4.925
S.Chicago,Ill. W14 ....4.925
SparrowsPoint,Md. B2..4.925
Steubenville,O. W10 ...4.925
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5, Y1 ...4.925

SHEETS, H.R. (19) Ga. & Lighter

Niles,O. M21 .....6.05

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.10
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.10
Munhall,Pa. U5 .....8.10
Newport,Ky A2 .....8.10
Youngstown U5, Y1 ....8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Cleveland J5, R2 .....7.275
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.375
Fairfield,Ala. T2 .....7.275
Fairless,Pa. U5 .....7.325
Farrell,Pa. S3 .....7.275
Fontana,Calif. K1 ....8.025
Gary,Ind. U5 .....7.275
Ind.Harbor,Ind. I-2, Y1 7.275
Irvin,Pa. U5 .....7.275
Lackawanna(35) B2 ..7.275
Munhall,Pa. U5 .....7.275
Pittsburgh J5 .....7.275
S.Chicago,Ill. U5, W14.7.275
Sharon,Pa. S3 .....7.275
SparrowsPoint(36) B2..7.275
Warren,O. R2 .....7.275
Weirton,W.Va. W6 ...7.275
Youngstown U5, Y1 ..7.275

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.675
Warren,O. R2 .....5.675

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....6.80
Middletown,O. A10 ...6.55
Warren,O. R2 .....6.80

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.05
Allenport,Pa. P7 .....6.05
Cleveland J5, R2 .....6.05
Conshohocken,Pa. A3 ..6.10
Detroit M1 .....6.05
Ecorse,Mich. G5 .....6.15
Fairfield,Ala. T2 .....6.05
Fairless,Pa. U5 .....6.10
Follansbee,W.Va. F4 ....6.05
Fontana,Calif. K1 .....7.30
Gary,Ind. U5 .....6.05
GraniteCity,Ill. G4 6.15
Ind.Harbor,Ind. I-2, Y1.6.05
Irvin,Pa. U5 .....6.05
Lackawanna,N.Y. B2 ..6.05
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....6.05
Newport,Ky. A2 .....6.05
Pittsburg,Calif. C11 ....7.00
Pittsburgh J5 .....6.05
Portsmouth,O. P12 ....6.05
SparrowsPoint,Md. B2 ..6.05
Steubenville,O. W10 ....6.05
Warren,O. R2 .....6.05
Weirton,W.Va. W6 ....6.05
Yorkville,O. W10 .....6.05
Youngstown Y1 .....6.05

SHEETS, Cold-Rolled, High-Strength, Low Alloy

Cleveland J5, R2 .....8.975
Ecorse,Mich. G5 .....9.075
Fairless,Pa. U5 .....9.025
Fontana,Calif. K1 ..10.275
Gary, Ind. U5 .....8.975
IndianaHarbor,Ind. Y1.8.975
Irvin,Pa. U5 .....8.975
Lackawanna(37) B2 ..8.975
Pittsburgh J5 .....8.975
SparrowsPoint(38) B2..8.975
Warren,O. R2 .....8.975
Weirton,W.Va. W6 ....8.975
Youngstown Y1 .....8.975

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland,Ky. A10	.6.95	7.20
Canton,O. R2	....6.95	7.45
Fairfield T2	.....6.95	7.20
Gary,Ind. U5	....6.95	7.20
GraniteCity,Ill. G4	*7.05*	
Ind.Harbor I-2	..6.95	7.20
Irvin,Pa. U5	.....6.95	7.20
Kokomo,Ind. C16	..7.05	...
MartinsFry. W10	6.95	7.20
Pitts.,Calif. C11	..7.70	...
Pittsburgh J5	....6.95	...
SparrowsPt. B2	..6.95	...

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ....7.20

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2. .6.60‡
Ashland,Ky. A10 .....6.60†
Canton,O. R2 .....6.60‡
Dover,O. E6 .....6.60†
Fairfield,Ala. T2 .....6.60†
Gary,Ind. U5 .....6.60†
*GraniteCity,Ill. G4 6.70**
Ind.Harbor,Ind. I-2 ....6.60†
Irvin,Pa. U5 .....6.60†
Kokomo,Ind. C16 .....6.70‡
MartinsFerry,O. W10 ..6.60*
Middletown,O. A10 ....6.60†
Pittsburg,Calif. C11 ...7.35*
Pittsburgh J5 .....6.60†
SparrowsPt.,Md. B2 ..6.60†
Warren,O. R2 .....6.60†
Weirton,W.Va. W6 ....6.60*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....9.725
SparrowsPt.(39) B2 ..9.725

SHEETS, Galvanneaied Steel

Canton,O. R2 .....7.00
Irvin,Pa. U5 .....7.00

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....6.85
Middletown,O. A10 ....6.85

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.425
Niles,O.(28) R2 .....7.425
Youngstown J5 .....7.275
Weirton,W.Va. W6 ....7.275

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.25
Butler,Pa. A10 (type 2). 9.35

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.625
Cleveland R2 .....6.625
Fairfield,Ala. T2 .....6.625
Gary,Ind. U5 .....6.625
GraniteCity,Ill. G4 6.725
Ind.Harbor,Ind. I-2, Y1.6.625
Irvin,Pa. U5 .....6.625
Middletown,O. A10 ....6.625
Niles,O. M21, S3 ....6.625
Youngstown Y1 .....6.625

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.65
Ind.Harbor,Ind. I-2 ...8.475
Yorkville,O. W10 .....8.475

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10 7.00
Gary,Ind. U5 .....7.00
Mansfield,O. E6 .....7.00
Middletown,O. A10 ....7.00
Niles,O. M21, R2, S3 ..7.00
Weirton,W.Va. W6 ....7.00

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.40

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connor Steel Div., H. K. Porter Co. Inc
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	4.925
Allenport,Pa. P7	4.925
Alton,Ill. L1	5.125
Ashland,Ky.(8) A10	4.925
Atlanta A11	4.925
Bessemer,Ala. T2	4.925
Birmingham C15	4.925
Buffalo(27) R2	4.925
Conshohocken,Pa. A3	4.975
Detroit MI	5.025
Ecorse,Mich. G5	5.025
Fairfield,Ala. T2	4.925
Fontana,Calif. K1	5.675
Gary,Ind. U5	4.925
Ind.Harbor,Ind. I-2, Y1	4.925
Johnstown,Pa.(25) B2	4.925
Lackaw'na,N.Y.(25) B2	4.925
LosAngeles(25) B3	5.675
Minnequa,Colo. C10	6.025
Riverdale,Ill. A1	4.925
SanFrancisco S7	6.35
Seattle(25) B3	5.925
Seattle N14	6.35
Sharon,Pa. S3	4.925
S.Chicago W14	4.925
S.SanFrancisco(25) B3	5.675
SparrowsPoint,Md. B2	4.925
Sterling,Ill.(1) N15	4.925
Sterling,Ill. N15	5.025
Torrance,Calif. C11	5.675
Warren,O. R2	4.925
Weirton,W.Va. W6	4.925
Youngstown U5	4.925

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.10
Farrell,Pa. S3	8.10
Gary,Ind. U5	8.10
Houston S5	8.35
Ind.Harbor,Ind. Y1	8.10
KansasCity,Mo. S5	8.35
LosAngeles B3	9.30
Lowellville,O. S3	8.10
Newport,Ky. A2	8.10
Sharon,Pa. A2, S3	8.10
S.Chicago,Ill. W14	8.10
Youngstown U5, Y1	8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2	7.325
Conshohocken,Pa. A3	7.325
Ecorse,Mich. G5	7.425
Fairfield,Ala. T2	7.325
Farrell,Pa. S3	7.325
Gary,Ind. U5	7.325
Ind.Harbor,Ind. I-2, Y1	7.325
Lackawanna,N.Y. B2	7.325
LosAngeles(25) B3	8.075
Seattle(25) B3	8.325
Sharon,Pa. S3	7.325
S.Chicago,Ill. W14	7.325
S.SanFrancisco(25) B3	8.075
SparrowsPoint,Md. B2	7.325
Warren,O. R2	7.325
Weirton,W.Va. W6	7.325
Youngstown U5, Y1	7.325

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.175
Warren,O. R2	5.675

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.15
Baltimore T6	7.15
Boston T6	7.70
Buffalo S40	7.15
Cleveland A7, J5	7.15
Dearborn,Mich. D3	7.25
Detroit D2, M1, P20	7.25
Dover,O. G6	7.15
Ecorse,Mich. G5	7.25
Evanston,Ill. M22	7.25
Follansbee,W.Va. F4	7.15
Fontana,Calif. K1	9.00
FranklinPark,Ill. T6	7.25
Ind.Harbor,Ind. Y1	7.15
Indianapolis J5	7.30
LosAngeles J5	9.05
LosAngeles C1	9.20
NewBedford,Mass. R10	7.60
NewBritain,Conn. S15	7.60
NewCastle,Pa. B4, E5	7.15
NewHaven,Conn. D2	7.60
NewKensington,Pa. A6	7.15
Pawtucket,R.I. R3	7.80
Pawtucket,R.I. N8	7.70
Philadelphia P24	7.70
Pittsburgh J5	7.15
Riverdale,Ill. A1	7.25
Rome,N.Y.(32) R6	7.15
Sharon,Pa. S3	7.15
Trenton,N.J.(31) R5	8.60
Wallingford,Conn. W2	7.60
Warren,O. R2, T5	7.15
Weirton,W.Va. W6	7.15
Worcester,Mass. A7	7.70
Youngstown J5, Y1	7.15

STRIP, Cold-Rolled Alloy

Boston T6	15.40
Carnegie,Pa. S18	15.05
Cleveland A7	15.05
Dover,O. G6	15.05
Farrell,Pa. S3	15.05
FranklinPark,Ill. T6	15.05
Harrison,N.J. C18	15.05
Indianapolis J5	15.20
Lowellville,O. S3	15.05
Pawtucket,R.I. N8	15.40
Riverdale,Ill. A1	15.05
Sharon,Pa. S3	15.05
Worcester,Mass. A7	15.35
Youngstown J5	15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.45
Dearborn,Mich. D3	10.60
Dover,O. G6	10.45
Ecorse,Mich. G5	10.60
Farrell,Pa. S3	10.50
Ind.Harbor,Ind. Y1	10.65
Sharon,Pa. S3	10.50
Warren,O. R2	10.45

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	...	...	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
NewYork W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	16.10	19.30
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)			Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	...	...	18.10	21.95	26.30
Buffalo W12	...	...	18.10	....	....
Fostoria,O. S1	...	...	18.30	22.15	....
FranklinPark,Ill. T6	...	...	18.45	22.30	26.65
Harrison,N.J. C18	...	...	18.10	21.95	26.30
New York W3	...	...	18.10	21.95	26.30
Palmer,Mass. W12	...	...	18.10	....	....
Trenton,N.J. R5	...	...	18.10	21.95	26.30
Worcester,Mass. A7, T6	...	...	18.10	21.95	26.30
Youngstown J5	...	...	18.45	22.30	26.65

STRIP, Galvanized (Continuous)

Sharon,Pa. S3	7.275

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdale,Ill. A1	5.50
Sharon,Pa. S3	5.35
Youngstown U5	5.35

STRIP, C.R. Electrogalvanized

Cleveland A7	7.15*
Dover,O. G6	7.15*
Evanston,Ill. M22	7.25*
Riverdale,Ill. A1	7.25*
Warren,O. B9, T5	7.15*
Worcester,Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

SILICON STEEL

H.R. SHEETS(22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	....	11.80	12.90	13.95
Mansfield,O. E6	9.625	11.10	11.80	12.90	13.95
Newport,Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles,O. M21, S3	9.625	11.10	11.80	12.90	....
Vandergrift,Pa. U5	....	11.10	11.80	12.90	13.95
Warren,O. R2	9.625	11.10	11.80	12.90	....
Zanesville,O. A10	....	11.10	11.80	12.90	13.95

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.35	12.05	13.15	14.20
Brackenridge,Pa. A4	....	....	12.05	13.15	14.20
GraniteCity,Ill. G4	9.725*	10.95*	11.65*	12.75*	....
IndianaHarbor,Ind. I-2	9.625†	10.85*	11.55*	12.65*	....
Mansfield,O. E6	9.625*	11.35	12.05	13.15	14.20
Vandergrift,Pa. U5	9.625*	11.35	12.05	13.15	14.20
Warren,O. R2	9.625*	11.35	12.05	13.15	14.20
Zanesville,O. A10	....	11.35†	12.05	13.15	14.20
					Stator
Vandergrift,Pa. U5	....	....	....	....	7.85

H.R. SHEETS (22 Ga., cut lengths)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.00	15.55	16.05	17.10
Vandergrift,Pa. U5	15.00	15.55	16.05	17.10
Zanesville,O. A10	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	17.60	19.20	19.70	20.20	15.25††
Butler,Pa. A10	....	....	19.20	19.70	20.20	....
Vandergrift,Pa. U5	16.60	17.60	19.20	19.70	20.20	15.25**
Warren,O. R2	....	....	....	....	....	15.25‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower. ††Coils only.

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Weirton,W.Va. W6	8.75	9.00	9.40
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif. K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va. W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2, Y1	7.85
Irvin,Pa. U5	7.85

Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	$7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5	$11.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	7.65
Aliquippa,Pa. J5	7.65
Alton,Ill. L1	7.85
Atlanta A11	7.65
Bartonville,Ill. K4	7.75
Buffalo W12	7.65
Chicago W13	7.65
Cleveland A7, C20	7.65
Crawfordsville,Ind. M8	7.75
Donora,Pa. A7	7.65
Duluth A7	7.65
Fairfield,Ala. T2	7.65
Fostoria,O.(24) S1	7.75
Houston S5	7.90
Jacksonville,Fla. M8	8.00
Johnstown,Pa. B2	7.65
Joliet,Ill. A7	7.65
KansasCity,Mo. S5	7.90
Kokomo,Ind. C16	7.75
LosAngeles B3	8.60
Minnequa,Colo. C10	7.90
Monessen,Pa. P7, P16	7.65
N.Tonawanda,N.Y. B11	7.65
Palmer,Mass. W12	7.95
Pittsburg,Calif. C11	8.60
Portsmouth,O. P12	7.65
Rankin,Pa. A7	7.65
S.Chicago,Ill. R2	7.65
S.SanFrancisco C10	8.60
SparrowsPoint,Md. B2	7.75
Sterling,Ill.(1) N15	7.65
Sterling,Ill. N15	7.75
Struthers,O. Y1	7.65
Waukegan,Ill. A7	7.65
Worcester,Mass. A7	7.95

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	12.65
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	12.65
Minnequa,Colo. C10	12.775
Monessen,Pa. P7, P16	12.65
Muncie,Ind. I-7	12.85
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	12.95
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	12.65
Roebling,N.J. R5	12.95
SparrowsPt.,Md. B2	12.75
Struthers,O. Y1	12.65
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.30
Alton,Ill. L1	9.50
Buffalo W12	9.30
Cleveland A7	9.30
Donora,Pa. A7	9.30
Duluth A7	9.30
Johnstown,Pa. B2	9.30
KansasCity,Mo. S5	9.55
LosAngeles B3	10.25
Minnequa,Colo. C10	9.50
Monessen,Pa. P7, P16	9.30
NewHaven,Conn. A7	9.60
Palmer,Mass. W12	9.60
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.30
Roebling,N.J. R5	9.60
S.Chicago,Ill. R2	9.30
S.SanFrancisco C10	10.25
SparrowsPt.,Md. B2	9.40
Struthers,O. Y1	9.30
Trenton,N.J. A7	9.60
Waukegan,Ill. A7	9.30
Worcester,Mass. A7, J4, T6	9.60

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.30
Alton,Ill. L1	9.50
Bartonville,Ill. K4	9.40
Buffalo W12	9.30
Cleveland A7	9.30
Donora,Pa. A7	9.30
Duluth A7	9.30
Fostoria,O. S1	9.35
Johnstown,Pa. B2	9.30
KansasCity,Mo. S5	9.55
LosAngeles B3	10.25
Milbury,Mass.(12) N6	9.60
Minnequa,Colo. C10	9.50
Monessen,Pa. P7, P16	9.30
Muncie,Ind. I-7	9.50
Palmer,Mass.(12) W12	9.60
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.30
Roebling,N.J. R5	9.60
S.Chicago,Ill. R2	9.30
S.SanFrancisco C10	10.25
SparrowsPt.,Md. B2	9.40
Struthers,O. Y1	9.30
Trenton,N.J. A7	9.60
Waukegan,Ill. A7	9.30
Worcester A7, J4, T6	9.60

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	15.80
Bartonville,Ill. K4	15.70
Buffalo W12	15.60
Chicago W13	15.60
Cleveland A7	15.60
Crawfordsville,Ind. M8	15.70
Fostoria,O. S1	15.60
Houston S5	15.85
Jacksonville,Fla. M8	15.95
Johnstown,Pa. B2	15.60
KansasCity,Mo. S5	15.85
Kokomo,Ind. C16	15.60
Minnequa,Colo. C10	15.85
Monessen,Pa. P16	15.60
Muncie,Ind. I-7	15.80
Palmer,Mass. W12	15.90
S.SanFrancisco C10	16.45
Waukegan,Ill. A7	15.60
Worcester,Mass. A7, T6	15.90

ROPE WIRE	(A)
Bartonville,Ill. K4	12.75
Buffalo W12	12.75
Fostoria,O. S1	12.75
Johnstown,Pa. B2	12.75
Monessen,Pa. P7	12.75
Muncie,Ind. I-7	12.95
Palmer,Mass. W12	13.05
Portsmouth,O. P12	12.75
Roebling,N.J. R5	13.05
SparrowsPt.,Md. B2	12.85
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

Bartonville,Ill. K4	....16.55
Monessen,Pa. P16	....16.55
Roebling,N.J. R5	....17.05

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	....11.65
Baltimore T6	.....11.95
Boston T6	.....11.95
Buffalo W12	.....11.65
Chicago W13	.....11.75
Cleveland A7	.....11.65
Crawfordsville,Ind. M8	.11.65
Dover,O. G6	.....11.65
Fostoria,O. S1	.....11.65
FranklinPark,Ill. T6	..11.75
Kokomo,Ind. C16	....11.65
Massillon,O. R8	.....11.65
Milwaukee C23	.....11.85
Monessen,Pa. P7, P16	..11.65
Palmer,Mass. W12	....11.95
Pawtucket,R.I. N8	....11.95
Philadelphia P24	.....11.95
Riverdale,Ill. A1	.....11.75
Rome,N.Y. R6	.....11.65
Sharon,Pa. S3	.....11.65
Trenton,N.J. R5	.....11.95
Warren,O. B9	.....11.65
Worcester,Mass. A7, T6	11.95

NAILS, Stock — **Col.**

AlabamaCity,Ala. R2	..173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	..175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	...178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7 .....$9.10

NAILS, Cut (100 lb keg)
To Dealers (33)

Conshohocken,Pa. A3	..$9.80
Wheeling,W.Va. W10	..9.80

POLISHED STAPLES — **Col.**

AlabamaCity,Ala. R2	..175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	..177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	...180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(Per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	.....10.36
Bartonville,Ill. K4	....10.36
Buffalo W12	.....10.26
Chicago W13	.....10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	.....10.26
Duluth A7	.....10.26
Fairfield,Ala. T2	.....10.26
Houston S5	.....10.51
Jacksonville,Fla. M8	..10.36
Johnstown,Pa. B2	.....10.26
Joliet,Ill. A7	.....10.26
KansasCity,Mo. S5	....10.51
Kokomo,Ind. C16	.....10.36
LosAngeles B3	.....11.05
Minnequa,Colo. C10	...10.51
Pittsburg,Calif. C11	...11.04
S.Chicago,Ill. R2	.....10.26
S.SanFrancisco C10	....11.04
SparrowsPt.,Md. B2	..10.36
Sterling,Ill. (37) N15	..10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	.$10.60
Atlanta A11	.....10.70
Bartonville,Ill. K4	....10.70
Buffalo W12	.....10.60
Chicago W13	.....10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	.....10.60
Duluth A7	.....10.60
Fairfield,Ala. T2	....10.60
Houston S5	.....10.85
Jacksonville,Fla. M8	..10.70
Johnstown,Pa. B2	....10.60
Joliet,Ill. A7	.....10.60
KansasCity,Mo. S5	....10.85
Kokomo,Ind. C16	.....10.70
LosAngeles B3	.....11.40
Minnequa,Colo. C10	..10.85
Pittsburg,Calif. C11	...11.40
S.Chicago,Ill. R2	.....10.60
S.SanFrancisco C10	....11.40
SparrowsPt.,Md. B2	..10.70
Sterling,Ill.(37) N15	..10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	.....10.75
Bartonville,Ill. K4	....10.75
Buffalo W12	.....10.65
Chicago W13	.....10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	.....10.65
Duluth A7	.....10.65
Fairfield,Ala. T2	.....10.65
Houston S5	.....10.90
Jacksonville,Fla. M8	..10.75
Johnstown,Pa. B2	....10.65
Joliet,Ill. A7	.....10.65
KansasCity,Mo. S5	....10.90
Kokomo,Ind. C16	....10.75
LosAngeles B3	.....11.45
Minnequa,Colo. C10	..10.90
Pittsburg,Calif. C11	...11.45
S.Chicago,Ill. R2	.....10.65
S.SanFrancisco C10	....11.45
SparrowsPt.,Md. B2	..10.75
Sterling,Ill.(37) N15	..10.75

BALE TIES, Single Loop — **Col.**

AlabamaCity,Ala. R2	..212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	..214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	..172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	..174

WIRE, Barbed — **Col.**

AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	.....190§
Atlanta A11	.....198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	.198
Donora,Pa. A7	.....193†
Duluth A7	.....193†
Fairfield,Ala. T2	.....193†
Houston S5	.....198**
Jacksonville,Fla. M8	...198
Johnstown,Pa. B2	....196§
Joliet,Ill. A7	.....193†
KansasCity,Mo. S5	....198**
Kokomo,Ind. C16	.....195†
Minnequa,Colo. C10	...198**
Monessen,Pa. P7	.....196§
Pittsburg,Calif. C11	...213†
Rankin,Pa. A7	.....193†
S.Chicago,Ill. R2	....193**
S.SanFrancisco C10	....213*
SparrowsPoint,Md. B2	.198§
Sterling,Ill.(7) N15	...198††

WOVEN FENCE, 9-15 Ga. — **Col.**

Ala.City,Ala. R2	.....187**
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	.....192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	..192
Donora,Pa. A7	.....187†
Duluth A7	.....187†
Fairfield,Ala. T2	.....187†
Houston S5	.....192**
Jacksonville,Fla. M8	...192
Johnstown,Pa.(43) B2	..190§
Joliet,Ill. A7	.....187†
KansasCity,Mo. S5	....192**
Kokomo,Ind. C16	.....189†
Minnequa,Colo. C10	...192**
Pittsburg,Calif. C11	...210†
Rankin,Pa. A7	.....187†
S.Chicago,Ill. R2	.....187**
Sterling,Ill.(7) N15	....192††

WIRE (16 gage)	**An'ld Galv. Stone**	**Stone**
Ala.City,Ala.R2	17.15	18.70**
Aliq'ppa,Pa. J5	.17.15	18.95
Bartonville K4	..17.25	19.05
Cleveland A7	...17.15	....
Crawf'dsville M8	17.25	19.05
Fostoria,O. S1	..17.65	19.20†
Houston S5	....17.40	18.95**
Jacksonville M8	..17.25	19.05
Johnstown B2	..17.15	18.95§
Kan.City,Mo. S5	17.40	....
Kokomo C16	..17.25	18.80†
Minnequa C10	17.40	18.95**
P'lm'r,Mass.W12	17.45	19.00†
Pitts.,Calif. C11	17.50	19.05†
SparrowsPt. B2	17.25	19.05§
Sterling(37)N15	17.25	19.05††
Waukegan A7	..17.15	18.70†
Worcester A7	..17.45	....

WIRE, Merchant Quality
(6 to 8 gage) An'ld Galv.

Ala.City,Ala. R2	8.65	9.20**
Aliquippa J5	....8.65	9.325§
Atlanta(48) A11	8.75	9.425*
Bartonville(48) K4	8.75	9.425
Buffalo W12	....8.65	9.20†
Cleveland A7	....8.65	....
Crawfordsville M8	8.75	9.425
Donora,Pa. A7	..8.65	9.20†
Duluth A7	.....8.65	9.20†
Fairfield T2	.....8.65	9.20†
Houston(48) S5	.8.90	9.45**
Jacks'ville,Fla. M8	8.75	9.425
Johnstown B2(48)	8.65	9.325§
Joliet,Ill. A7	....8.65	9.20†
Kans.City(48) S5	8.90	9.45**
Kokomo C16	....8.75	9.30†
LosAngeles B3	9.60	10.275§
Minnequa C10	..8.90	9.45**
Monessen P7(48)	8.65	9.325§
Palmer,Mass. W12	8.95	9.50†
Pitts.Calif. C11	..9.60	10.15†
Rankin,Pa. A7	..8.65	9.20†
S.Chicago R2	....8.65	9.20**
S.SanFran. C10	..9.60	10.15**
Spar'wsPt.B2(48)	8.75	9.425§
Sterling(48) N15	8.90	9.575††
Sterling(1) (48)	8.80	9.475††
Struthers,O. Y1	..8.65	9.30‡
Worcester,Mass.A7	8.95	9.50†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts
Full Size Body (cut thread)

½ in. and smaller:	
6 in. and shorter ...	49.0
Longer than 6 in. ..	39.0
⅝ in. thru 1 in.:	
6 in. and shorter ...	39.0
Longer than 6 in. ..	35.0
1⅛ in. and larger:	
All lengths	35.0

Undersized Body (rolled thread)

½ in. and smaller:	
6 in. and shorter ...	49.0

Carriage, Machine, Lag Bolts
Hot Galvanized:

½ in. and smaller:	
6 in. and shorter ...	29.0
Longer than 6 in. ..	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter ...	49.0
Longer than 6 in. ..	39.0

Plow and Tap Bolts

½ in. and smaller by 6 in. and shorter..	49.0
Larger than ½ in. or longer than 6 in. .	39.0

Blank Bolts 39.0
Step, Elevator, Tire Bolts 49.0
Stove Bolts, Slotted:

⅛ to ¼ in. incl., 3 in. and shorter.	55.0
5/16 to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:
All sizes 55.5
Square Nuts, Reg. & Heavy, Hot Galvanized:
All sizes 41.0
Hex Nuts, Reg. & Heavy, Hot Pressed:

¾ in. and smaller..	60.5
⅞ in. to 1 in., incl..	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger ..	53.5

Hex Nuts, Reg. & Heavy, Cold Punched:

¾ in. and smaller..	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger ..	53.5

Hex Nuts, All Types, Hot Galvanized:

¾ in. and smaller ..	46.5
⅞ in. to 1 in., incl..	41.5
1⅛ in. to 1½ in., incl.	46.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller ..	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger ..	53.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

1 in. and smaller ..	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger..	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller..	60.5
¾ in. to 1 in., incl.	63.0
1⅛ to 1½ in., incl.	59.0
1⅝ in. and larger...	53.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:
6 in. and shorter:

⅝ in. and smaller..	40.0
¾, ⅞, and 1 in. diam.	22.0
Longer than 6 in.:	
⅝ in. and smaller..	8.0
¾, ⅞, and 1 in. diam.	+ 6.0

High Carbon, Heat Treated:
6 in. and shorter:

⅝ in. and smaller..	26.0
¾, ⅞, and 1 in. diam.	3.0
Longer than 6 in.:	
⅝ in. and smaller..	+ 13.0
¾, ⅞, and 1 in. diam.	+ 32.0

Flat Head Capscrews:
¾ in. and smaller.. + 76.0
Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam.:
6 in. and shorter.. Net
Longer than 6 in.. + 23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in., larger 12.25
1/16 in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2½	12	46.99	55.06	41.81
2½	12	51.76	60.65	46.05
2¾	12	56.04	65.67	49.88
3	12	59.76	70.03	53.19

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60-lb Under
Rails				
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	....
Huntington,W.Va. C15	....	....	....	6.50
IndianaHarbor,Ind. I-2	5.525	5.425	5.475	....
Johnstown,Pa. B2	....	....	....(16)	6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	.....6.60
Gary,Ind. U5	.....6.60
Ind.Harbor,Ind. I-2	....6.60
Lackawanna,N.Y. B2	..6.60
Minnequa,Colo. C10	....6.60
Seattle B3	.....6.75
Steelton,Pa. B2	.....6.60
Torrance,Calif. C11	....6.75

JOINT BARS

Bessemer,Pa. U5	.....6.975
Fairfield,Ala. T2	.....6.975
Ind.Harbor,Ind. I-2	...6.975
Joliet,Ill. U5	.....6.975
Lackawanna,N.Y. B2	..6.975
Minnequa,Colo. C10	...6.975
Steelton,Pa. B2	.....6.975

AXLES

Ind.Harbor,Ind. S13	...8.775
Johnstown,Pa. B2	....8.775

TRACK BOLTS, Untreated

Cleveland R2	.....14.75
KansasCity,Mo. S5	....14.75
Lebanon,Pa. B2	.....14.75
Minnequa,Colo. C10	...14.75
Pittsburgh P14	.....14.75
Seattle B3	.....15.25

SCREW SPIKES

Lebanon,Pa. B2 .....14.50

STANDARD TRACK SPIKES

Fairfield,Ala. T2	.....9.75
Ind.Harbor,Ind. I-2, Y1	9.75
KansasCity,Mo. S5	.....9.75
Lebanon,Pa. B2	.....9.75
Minnequa,Colo. C10	....9.75
Pittsburgh J5	.....9.75
Seattle B3	.....10.25
S.Chicago,Ill. R2	.....9.75
Struthers,O. Y1	.....9.75
Youngstown R2	.....9.75

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) 5/16" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.80c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than .0.035"; 0.035" and heavier, 0.25o higher
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.30c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Ambridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....	1.25	....	1	....	3.5	....
Lorain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Youngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Alton, Ill. L1	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Benwood, W. Va. W10	4.5	+22	+7.5	+31	+18	+39.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Butler, Pa. F6	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Fontana, Calif. K1	....	....	....	....	....	....	+8.25	+23.5	+5.25	+19.5	+1.75	+15	0.75	+14.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
Lorain, O. N3	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sharon, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sparrows Pt., Md. B2	3.5	+23	+8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Wheatland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Youngstown R2, Y1	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	....	....	....	....
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13	+7.25	+24	+7.25	+24
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5	5.25	+11.5	5.25	+11.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	58.50	63.25	62.75
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	92.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	84.50	89.25	88.50
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50
330	....	....	106.75	....	95.25	106.75	105.50	108.00	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
403	....	....	32.00	....	35.75	37.75	40.25	48.25	48.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	36.00	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	45.25	52.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	36.75	51.75	42.00
431	....	28.75	37.75	....	42.00	44.25	46.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	47.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	34.70	37.95	42.25	46.70	39.75
304L	36.90	40.55	45.10	49.85	....
316	40.35	44.50	49.50	54.50	58.25
316L	45.05	49.35	54.70	60.10	....
316 Cb	47.30	53.80	61.45	69.10	....
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	....
410	28.15	29.55	33.10	36.70	....
430	28.30	29.80	33.55	37.25	....
Inconel	48.00	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	33.10	38.75

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.305	Cr-Hot Work	0.475
Extra Carbon	0.360	W-Cr Hot Work	0.500
Special Carbon	0.475	V-Cr Hot Work	0.520
Oil Hardening	0.475	Hi-Carbon-Cr	0.925

Grade by Analysis (%)

W	Cr	V	Co	Mo		$ per lb
20.25	4.25	1.6	12.25	....	....	4.285
18.25	4.25	1	4.75	....	....	2.500
18	4	2	9	....	....	2.870
18	4	2	....	....	....	1.960
18	4	1	....	....	....	1.795
9	3.5	..	....	....	....	1.395
13.5	4	3	....	....	....	2.060
13.75	3.75	2	5	....	....	2.440
6.4	4.5	1.9	....	5	....	1.300
6	4	3	....	6	....	1.545
1.5	4	1	....	8.5	....	1.155

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.12	69.62	69.62	70.12
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	70.90	....	71.40	71.90
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood, Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.54	73.04	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb pigiets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	74.00
Philadelphia, deld.	82.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.28	8.88	9.68	....	8.76	9.06	11.34#	15.18	9.19	8.66	10.14
Birmingham	8.18	9.45	11.07	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	53.50	9.42	9.73	12.90#	15.28	9.63	9.72	11.20
Buffalo	8.25	9.00	11.07	55.98	8.50	8.80	11.00#	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.10	52.43	8.54	8.92	11.06	14.86	9.18	8.93	10.21
Cleveland	8.18	9.45	10.20	52.33	8.33	8.69	10.80#	14.74	9.01	8.79	10.11
Dallas	7.50	8.80	....	....	7.65	7.60	11.01	....	9.00	9.45	10.70
Denver	9.38	11.75	....	....	9.41	9.78	11.10	....	7.65	8.45	9.70
Detroit	8.43	9.70	10.45	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95[10]	....	8.50	8.75	9.05[10]	....	9.00	8.85	10.10
Houston	7.10	8.40	8.45	54.32	7.25	7.20	11.10	13.50	7.25	8.05	9.30
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.45	9.40	11.80	57.60	8.90	8.75	12.10	16.10	8.70	8.85	11.00
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96#	....	9.61	8.93	10.56
Milwaukee	8.33	9.58	10.23	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.31	9.57	12.76#	15.09	9.35	9.43	10.66
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	8.90	9.92	52.69	8.70	8.65	11.51#	15.01	8.50	8.75	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.33	8.60	10.80#	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45	9.70	13.00#	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; ‡‡over 4 in.; §§over 3 in.; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [8]—400 to 9999 lb; [5]—1000 to 1999 lb; [5]—2000 to 3999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $150; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Aisey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 Per Cent: St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $245.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Clearfield, Orviston, Snow Shoe, Pa., $305; Philadelphia, $310.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Clearfield, Orviston, Snow Shoe, Pa., $345; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-41; 70%, $36.40; 60%, $33-36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $33-34; Mexican, all rail, duty paid, $25.25-25.75; barge, Brownsville, Tex., $27.25-27.75.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over..	10.50
F.o.b. Riverton or Camden, N. J., west of Mississippi River.	9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.00
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh).	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	

Aluminum: Atomized, 500-lb drum, freight allowed	
Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	30.30-45.70†
Bronze, 5000-lb lots	45.70-49.80†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	47.80-52.60†
Phosphor-Copper, 5000-lb lots	57.80
Copper (atomized) 5000-lb lots	38.30-46.80†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70‡
Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over...	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.53	$5.33	$5.33	$5.73
Bar Size Angles	5.73	5.58	5.58	5.99
Structural Angles	5.73	5.58	5.58	5.99
I-Beams	5.88	5.72	5.72	6.02
Channels	5.88	5.72	5.72	6.02
Plates (basic bessemer)	6.79	6.62	6.62	6.94
Sheets, H.R.	8.25	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	9.00	8.95	8.95	9.25
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	6.23	6.07	6.07	6.43
Hot-Rolled Bands	7.20	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (‖)	8.02	8.02	7.92	8.20

†Per 82 lb, net, reel. ‖Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	25.00-27.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom.
Brazilian iron ore, 68-69%	27.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$11.00-12.00*
Domestic, concentrates f.o.b. milling points	18.00-20.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included), $134.40 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$46.00-48.00
48% 2.8:1	42.00-44.00
48% no ratio	32.00-34.00

South African Transvaal

48% no ratio	$32.00-34.00
44% no ratio	24.00-25.00

Turkish

48% 3:1	$51.00-55.00

Domestic

Rail nearest seller

18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard	
50-55%	$2.25-2.40
60-65%	2.60-3.00

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $4.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa., 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton; $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANINUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38.43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8M x D, 21.25c, per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 22.00c per lb of Si. Packed, c.l. 23.65c, ton lot 24.95c, less ton 25.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c, for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Bortam: (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3⅛ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered, Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots, $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works. Mt. Pleasant, Siglo, Tenn., $110 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

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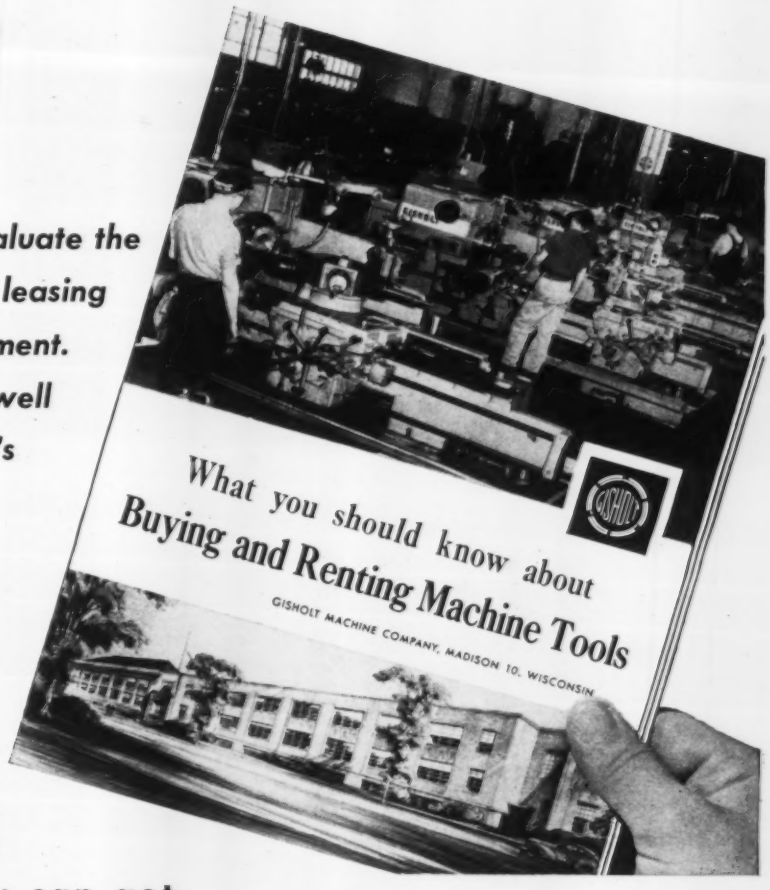

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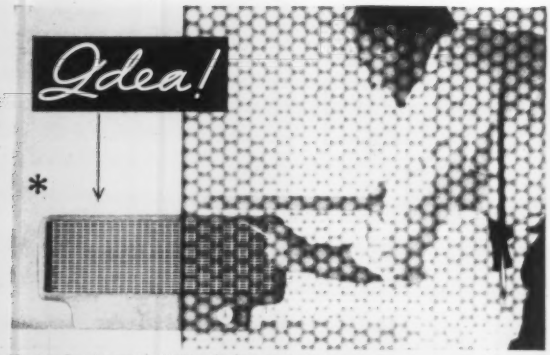

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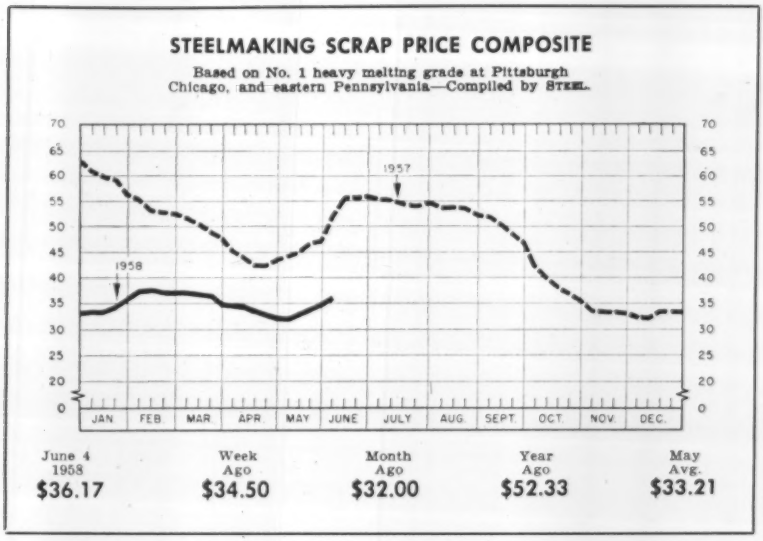
STEELMAKING SCRAP PRICE COMPOSITE
Based on No. 1 heavy melting grade at Pittsburgh Chicago, and eastern Pennsylvania—Compiled by STEEL.
1957
1958
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
June 4 1958 $36.17
Week Ago $34.50
Month Ago $32.00
Year Ago $52.33
May Avg. $33.21

Scrap Rising with Steel Rate

Jump of 4 points in national ingot rate to 60.5 per cent, highest this year, serves to push STEEL's scrap composite up another $1.67 a ton to $36.17

Scrap Prices, Page 160

Pittsburgh — Scrap prices are higher, but some buyers feel the upward movement is losing momentum. A local mill paid $36-$37 for No. 1 heavy melting. Purchases by a mill on the fringe of this district indicate that No. 2 heavy melting can be bought locally for $32. No. 2 bundles are available at $27. Fisher Body Div., General Motors Corp., sold its factory bundles to brokers at $40.30 to $40.75 (up $4.50 from the previous month's prices), but brokers are finding no takers. Railroad lists closed higher. The B&O sold No. 1 heavy melting at $40.65, up $4.65.

Chicago—Higher scrap prices are rolling along with the improved district steelmaking rate. Advances of $2 to $3 a ton on several leading grades of industrial material are noted, despite the absence of large mill buying. The limited buying being done is serving to provide market support. Prices being paid include $39 for No. 1 heavy melting industrial, $43 for No. 1 factory bundles, and $42.50 for No. 1 railroad heavy melting. The mills still are not buying dealer material.

Philadelphia—The market here is quiet and conditions are not much changed from a week ago. Prices are steady.

New York—No. 1 heavy melting steel is now quoted at $30-$31, No. 2 at $26-$27, No. 1 bundles at $30-$31, and low phos structurals and plates at $33-$34. Other prices are unchanged.

Cleveland — Although demand continues sluggish, the scrap market here and in the Valley appears stronger. Trade sentiment is buoyed by rising steelmaking operations and the prospect that industrial scrap supplies will shrink over the summer months.

Buffalo — Scrap dealers await placement of June mill orders to clarify the price situation. The market is firmer, due to strength in other districts and rising steel production, but this has not yet been reflected in price increases. Some observers expect an advance of $2 to $3 a ton on the mill grades when June orders are placed.

Detroit—Dealer activity following the closing of auto lists has boosted area scrap prices, but brokers and dealers say there is little buying to establish firm prices. Two district mills are in the market for small tonnages.

Cincinnati—Prices on the principal grades of steelmaking scrap jumped $3 a ton here last week as a local mill entered the market. No. 1 heavy melting moved up to $34-$35, broker's buying price.

Youngstown—Signs are increasing here of returning strength in the scrap market. Two recent sales to large district mills were at $36 for No. 1 heavy melting, up $3 from previous representative sales.

St. Louis—Although the market continues sluggish, local scrap prices

(*Please turn to Page* 165)

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Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, June 4, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

June 4	$36.17
May 28	34.50
May Avg.	33.21
June 1957	54.89
June 1953	40.50

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*36.00-37.00*
No. 2 heavy melting	*31.00-32.00*
No. 1 dealer bundles	*36.00-37.00*
No. 2 bundles	26.00-27.00
No. 1 busheling	*36.00-37.00*
No. 1 factory bundles	*41.00-42.00*
Machine shop turnings	*14.00-15.00*
Mixed borings, turnings	*14.00-15.00*
Short shovel turnings	*18.00-19.00*
Cast iron borings	*18.00-19.00*
Cut structurals:	
2 ft and under	*40.00-41.00*
3 ft lengths	*38.00-39.00*
Heavy turnings	30.00-31.00
Punchings & plate scrap	*40.00-41.00*
Electric furnace bundles	37.00-38.00

Cast Iron Grades

No. 1 cupola	40.00-41.00
Stove plate	40.00-41.00
Unstripped motor blocks	23.00-24.00
Clean auto cast	40.00-41.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	*40.00-41.00*
Rails, 2 ft and under	53.00-54.00
Rails, 18 in. and under	54.00-55.00
Random rails	50.00-51.00
Railroad specialties	*44.00-45.00*
Angles, splice bars	47.00-48.00
Rails, rerolling	55.00-56.00

Stainless Steel Scrap

18-8 bundles & solids	170.00-175.00
18-8 turnings	95.00-100.00
430 bundles & solids	95.00-100.00
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt., indus.	*38.00-39.00*
No. 1 hvy melt., dealer	*36.00-37.00*
No. 2 heavy melting	*34.00-35.00*
No. 1 factory bundles	*42.00-43.00*
No. 1 dealer bundles	*37.00-38.00*
No. 2 bundles	*27.00-28.00*
No. 1 busheling, indus.	*38.00-39.00*
No. 1 busheling, dealer	*36.00-37.00*
Machine shop turnings	*19.00-20.00*
Mixed borings, turnings	*21.00-22.00*
Short shovel turnings	*21.00-22.00*
Cast iron borings	*21.00-22.00*
Cut structurals, 3 ft	*42.00-43.00*
Punchings & plate scrap	*43.00-44.00*

Cast Iron Grades

No. 1 cupola	41.00-42.00
Stove plate	37.00-38.00
Unstripped motor blocks	33.00-34.00
Clean auto cast	46.00-47.00
Drop broken machinery	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	*41.50-42.50*
R.R. malleable	50.00-51.00
Rails, 2 ft and under	*53.00-54.00*
Rails, 18 in. and under	*54.00-55.00*
Angles, splice bars	*49.00--50.00*
Axles	*59.00-60.00*
Rails, rerolling	*56.00-57.00*

Stainless Steel Scrap

18-8 bundles & solids	165.00-170.00
18-8 turnings	90.00-95.00
430 bundles & solids	90.00-95.00
430 turnings	50.00-55.00

YOUNGSTOWN

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	22.00-23.00
No. 1 busheling	36.00-37.00
No. 1 bundles	36.00-37.00
No. 2 bundles	21.00-22.00
Machine shop turnings	9.00-10.00
Short shovel turnings	13.00-14.00
Cast iron borings	13.00-14.00
Low phos.	34.00-35.00
Electric furnace bundles	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00

CLEVELAND

No. 1 heavy melting	32.50-33.50
No. 2 heavy melting	19.00-20.00
No. 1 factory bundles	*34.00-35.00*
No. 1 bundles	32.50-33.50
No. 2 bundles	20.00-21.00
No. 1 busheling	32.50-33.50
Machine shop turnings, Short shovel turnings	7.00-8.00 11.00-12.00
Mixed borings, turnings	11.00-12.00
Cast iron borings	11.00-12.00
Cut foundry steel	34.00-35.00
Cut structurals, plates 2 ft and under	36.00-37.00
Low phos, punchings & plate	30.00-31.00
Alloy free, short shovel turnings	16.00-17.00
Electric furnace bundles	33.50-34.50

Cast Iron Grades

No. 1 cupola	42.00-43.00
Charging box cast	33.00-34.00
Heavy breakable cast.	33.00-34.00
Stove plate	43.00-44.00
Unstripped motor blocks	25.00-26.00
Brake shoes	33.00-34.00
Clean auto cast	42.00-43.00
Burnt cast	30.00-31.00
Drop broken machinery	47.00-48.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Rails, random lengths	49.00-50.00
Cast steel	44.00-45.00
Railroad specialties	47.00-48.00
Uncut tires	40.00-41.00
Angles, splice bars	46.00-47.00
Rails, rerolling	51.00-52.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	160.00-165.00
18-8 turnings	90.00-95.00
430 clips, bundles, solids	75.00-80.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	*33.00*
No. 2 heavy melting	30.00
No. 1 bundles	*34.00*
No. 2 bundles	23.00
No. 1 busheling	*33.00*
Machine shop turnings	16.00†
Short shovel turnings	18.00†

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	33.00
Heavy breakable cast.	33.00
Unstripped motor blocks	34.00
Clean auto cast	44.00
Stove plate	*38.00*

Railroad Scrap

No. 1 R.R. heavy melt.	38.00
Rails, 18 in. and under	48.00
Rails, random lengths	45.00
Rails, rerolling	*55.00*
Angles, splice bars	45.00

BIRMINGHAM

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	30.00-31.00
No. 2 bundles	19.00-20.00
No. 1 busheling	30.00-31.00
Cast iron borings	12.00-13.00
Machine shop turnings	20.00-21.00
Short shovel turnings	21.00-22.00
Bar crops and plates	37.00-38.00
Structurals & plates	36.00-37.00
Electric furnace bundles	34.00-35.00
Electric furnace: 2 ft and under	33.00-34.00
3 ft and under	32.00-33.00

Cast Iron Grades

No. 1 cupola	48.00-49.00
Stove plate	48.00-49.00
Unstripped motor blocks	38.00-39.00
Charging box cast	22.00-23.00
No. 1 wheels	34.00-35.00

Railroad Scrap

No. 1 R.R heavy melt.	32.00-34.00
Rails, 18 in. and under	47.00-48.00
Rails, rerolling	46.00-47.00
Rails, random lengths	43.00-44.00
Angles, splice bars	39.00-40.00

PHILADELPHIA

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	31.00
No. 1 bundles	34.00-35.00
No. 2 bundles	24.00
No. 1 busheling	34.00-35.00
Electric furnace bundles	36.00
Mixed borings, turnings	16.00†
Short shovel turnings	18.00
Machine shop turnings	15.00
Heavy turnings	29.00
Structural & plate	39.00-40.00
Couplers, springs, wheels	43.50
Rail crops, 2 ft & under	56.00-58.00

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast.	40.00
Malleable	58.00-59.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*30.00-31.00*
No. 2 heavy melting	*26.00-27.00*
No. 1 bundles	*30.00-31.00*
No. 2 bundles	16.00-17.00
Machine shop turnings	8.00-9.00†
Mixed borings, turnings	9.00-10.00†
Short shovel turnings	11.00-12.00†
Low phos (structurals & plates)	*33.00-34.00*

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	135.00-140.00
18-8 borings, turnings	45.00-50.00
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	60.00-65.00

BUFFALO

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	26.00-27.00
No. 2 bundles	20.00-21.00
No. 1 busheling	26.00-27.00
Mixed borings, turnings	13.00-14.00
Machine shop turnings	10.00-11.00
Short shovel turnings	14.00-15.00
Cast iron borings	13.00-14.00
Low phos. structurals and plate, 5 ft and under	31.00-32.00
2 ft and under	35.00-36.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	39.00-40.00
No. 1 machinery	43.00-44.00

Railroad Scrap

Rails, random lengths	45.00-46.00
Rails, 3 ft and under	51.00-52.00
Railroad specialties	35.00-36.00

CINCINNATI

(Buyers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*34.00-35.00*
No. 2 heavy melting	*28.50-29.50*
No. 1 bundles	*34.00-35.00*
No. 2 bundles	*24.00-25.00*
No. 1 busheling	*34.00-35.00*
Machine shop turnings	*11.50-12.50*
Mixed borings, turnings	*11.50-12.50*
Short shovel turnings	*13.50-14.50*
Cast iron borings	*11.50-12.50*
Low phos. 18 in.	*39.00-40.00*

Cast Iron Grades

No. 1 cupola	38.00-39.00
Heavy breakable cast.	32.00-33.00
Charging box cast	32.00-33.00
Drop broken machinery	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	*38.00-39.00*
Rails, 18 in. and under	52.00-53.00
Rails, random lengths	43.00-44.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	29.00†
No. 2 heavy melting	27.00†
No. 2 bundles	19.00†
Machine shop turnings	12.00
Crushed turnings	16.00
Low phos. plates, structurals	35.00†

Cast Iron Grades

No. 1 cupola	34.50
Heavy breakable	30.00†
Unstripped motor blocks	33.50

Railroad Scrap

No. 1 R.R. heavy melt.	31.00†

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	23.00-24.00
No. 2 heavy melting	18.00-19.00
No. 1 bundles	*23.00-24.00*
No. 2 bundles	14.00-15.00
No. 1 busheling	23.00-24.00
Machine shop turnings	4.00-5.00†
Mixed borings, turnings	4.00-5.000†
Short shovel turnings	6.00-7.00†
No. 1 cast	28.00-29.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	31.00-32.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*29.00-30.00*
No. 2 heavy melting	*22.00-23.00*
No. 1 bundles	*30.00-31.00*
No. 2 bundles	*19.00-20.00*
No. 1 busheling	*28.00-29.00*
Machine shop turnings	*8.00-9.00*
Mixed borings, turnings	*9.00-10.00*
Short shovel turnings	*10.00-11.00*
Punchings & plate	*31.00-32.00*

Cast Iron Grades

No. 1 cupola	*35.00-36.00*
Stove plate	27.00-28.00
Charging box cast	26.00-27.00
Heavy breakable	24.00-25.00
Unstripped motor blocks	15.00-16.00
Clean auto cast	*36.00-37.00*

SEATTLE

No. 1 heavy melting	27.00†
No. 2 heavy melting	25.00†
No. 1 bundles	21.00†
No. 2 bundles	20.00†
Machine shop turnings	16.00
Mixed borings, turnings	16.00
Electric furnace No. 1.	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast.	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	*32.00*
No. 2 heavy melting	*30.00*
No. 1 bundles	*28.00*
No. 2 bundles	*20.00*
Machine shop turnings	*11.00*
Shoveling turnings	11.00
Cast iron borings	11.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	41.00

Railroad Scrap

No. 1 R.R. heavy melt.	*32.00*

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast.	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory: Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

†Nominal.

‡F.o.b. Hamilton, Ont.

An accountant gave us an idea that adds up

"I'd like to be more systematic about my personal accounts," our accountant remarked. "I wish I had a plan to make me *save*, every single payday."

We explained that we have the finest kind of mechanism for regular savings—the plan for buying U.S. Savings Bonds through Payroll Savings. But she had given us an idea. If *she* was not familiar with our plan, there must be many other employees, too, who didn't know we have such a system.

We put in a call for our State Savings Bond Director. He sparked a company-wide plan that told our people about systematic buying of U.S. Savings Bonds. Every person on our payroll received an application card.

Within days we had the best employee participation we've enjoyed since the mid-forties. It showed that people welcome a chance to set up this soundest of investment plans. Today there are more payroll savers than ever before in peace time. Look up your State Director in the phone book or write: Savings Bonds Division, U.S. Treasury Dept., Washington, D. C.

STEEL
The Metalworking Weekly

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More Cutbacks Are Due

Producers of nonferrous metals will reduce workweek and extend vacations in effort to bring supply-demand into better balance. But stocks will continue to rise

Nonferrous Metal Prices, Pages 164 & 165

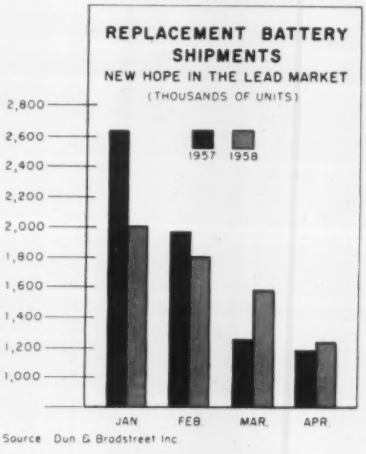
PRODUCTION plans of most producers of major nonferrous metals (aluminum, copper, lead, and zinc) call for further cutbacks through the summer months. But don't expect a drop in metal stocks. At best, the curtailments will only slow the rate of gain in excess supply.

Case in Point—In the copper industry, the big three—Anaconda Co., Kennecott Copper Corp., and Phelps Dodge Corp.—have announced reductions totaling over 8000 tons a month within the last few weeks. The effects of these cutbacks will not be felt in the market place until midsummer because of the time lag between mining the ore and refinishing the metal. Consumption will at least parallel that decline because of vacation shutdowns.

Curtailments in the copper industry since Jan. 1 come to almost 18,000 tons a month. Even though industry figures for April showed a sizable decline (about 10,000 tons) in refined production, supply was still 39,121 tons above shipments to fabricators. The May figures due this week will show some improvement, but stocks will still climb. While there has been some pickup in demand within the past week or two, it would take more of an upturn than most producers see now to close the gap.

Long Vacations — Producers are using a short workweek (three or four days) and long vacations (three weeks instead of two) to help bring supply into better balance with demand. Most of them say they have no more plans right now to slow down output. They're waiting to see what happens in the auto industry and home construction before calling the next move.

Ditto for Lead, Zinc—The picture is almost the same in the lead and zinc industry. Production of zinc is running between 15,000 and 20,000 tons a month ahead of shipments. In March (the latest Bureau of Mines figures) the difference between supply and demand for lead was 18,000 tons. With the end of the government's stockpiling program, those gaps may widen. Aside from extended vacations, producers are likely to maintain the status quo until the Seaton plan is settled. Hearings were scheduled to begin today before the Senate Interior Committee.



Aluminum, Too—Cutbacks in the aluminum industry this year will be moderated because some new capacity is coming in. Ormet Corp. is sticking to its schedule to bring in all five potlines at its new plant before the end of the year. Reynolds Metals Co. has another 112,500 annual tons of capacity coming in this year at Listerhill, Ala.

So far, aluminum output has been slashed about 30 per cent on an annual rate. The latest reduction came at Tacoma, Wash., where Kaiser Aluminum & Chemical Corp. shut down its entire plant.

Smelters Raise Prices

Custom smelters of copper, encouraged by their best business in months, raised their price last Tuesday (June 3) another 0.25 cent to 24.5 cents a pound. This puts them just 0.5 cent a pound away from the primary price, which still looks firm at 25 cents.

Custom smelters will tell you that the increased business is only the result of their lower price and is coming at the expense of primary producers. The primary men deny that they are losing much important business on a price basis. Some point to a slight pickup in their own orders as evidence that business is experiencing something resembling a spring pickup. But they add it isn't enough to warrant a price increase in primary copper at this time; it may vanish this summer.

Hints of Aluminum Hike

Donovan Wilmot, vice president of Aluminum Co. of America, hinted last week that aluminum prices will rise as the result of increased wage and employee benefit costs of 25 cents per manhour under the industry's three-year wage contract.

NONFERROUS PRICE RECORD

	Price June 4	Last Change	Previous Price	May Avg	Apr. Avg	June, 1957 Avg
Aluminum	24.00	Apr. 1, 1958	26.00	24.000	24.000	27.100
Copper	24.50-25.00	June 3, 1958	24.25-25.00	24.433	24.323	30.250
Lead	10.80	June 3, 1958	11.80	11.512	11.800	14.120
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	94.50	May 29, 1958	94.75	94.510	93.021	98.080
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	10.840

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

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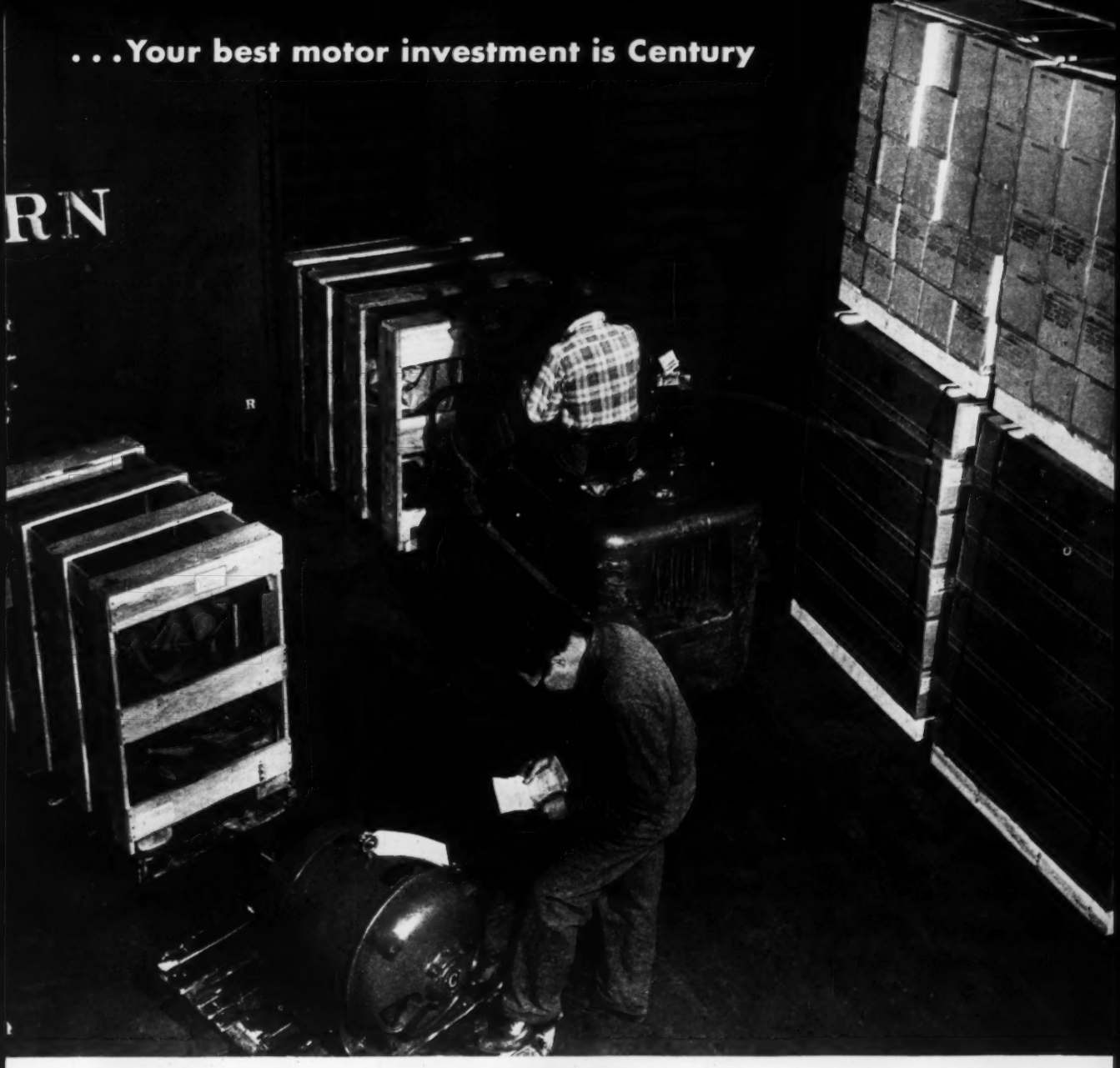

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CENTURY ELECTRIC COMPANY

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Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.00; ingots, 26.10. 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 27.90; No. 43, 27.70; No. 195, 28.70; No. 214, 29.50; No. 356, 27.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97-99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-90 per lb, nom.

Copper: Electrolytic, 25.00 deld.; custom smelters, 24.50; lake, 25.00 deld.; fire refined, 24.75 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 10.80; chemical, 10.90; corroding, 10.90, St. Louis, New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. thick, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $228-230 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty, New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: $70-100 per troy oz nom.

Palladium: $19-21 per troy oz.

Platinum: $64-70 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market 88.625 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 94.50.

Titanium: Sponge, 99.3+% grade A-1 ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $3.85.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 13.75; No. 2, 14.75; No. 5, 14.25 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 24.00-24.50; No. 12 foundry alloy (No. 2 grade), 21.25-21.50; 5% silicon alloy, 0.60 Cu max., 24.00-24.25; 13 alloy 0.60 Cu max., 24.00-24.25; 195 alloy, 24.25-25.50; 108 alloy, 21.75. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.75; grade 2, 21.25; grade 3, 20.00; grade 4, 17.25.

Brass Ingot: Red brass, No. 115, 26.00; tin bronze, No. 225, 35.00; No. 245, 29.75; high-leaded tin bronze, No. 305, 30.25; No. 1 yellow, No. 405, 21.75; manganese bronze, No. 421, 23.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.80, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.78, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 30.355; l.c.l., 30.98. Weatherproof, 30,000-lb lots, 32.53; l.c.l., 33.28. Magnet wire deld., 38.43, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $16.50 per cwt; pipe, full coils, $16.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, $24.00; plate, $12.50-19.20; H.R. strip, $12.50-22.90; $11.00-17.40.

ZIRCONIUM

C.R. strip, $15.90-31.25; forged or H.R. bars, ribbon zinc in coils, 20.50; plates, 19.00.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.249-0.136	41.10-45.60	.....
0.135-0.096	41.60-46.70	.....
0.125-0.096	.....	38.50-39.10
0.095-0.077	42.30-48.50	38.60-39.30
0.076-0.061	42.90-50.80	38.80-40.00
0.060-0.048	43.60-53.10	39.40-41.10
0.047-0.038	44.20-55.90	39.90-32.50
0.037-0.030	44.60-60.90	40.30-44.30
0.029-0.024	45.20-52.70	40.60-45.00
0.023-0.019	46.20-56.10	41.70-43.40
0.018-0.017	47.00-53.40	42.30-44.00
0.016-0.015	47.90-54.30	43.10-44.80
0.014	48.90	44.10-45.80
0.013-0.012	50.10	44.80
0.011	51.10	46.00
0.010-0.0095	52.60	47.40
0.009-0.0085	53.90	48.90
0.008-0.0075	55.50	50.10
0.007	57.00	51.60
0.006	58.60	53.00

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	41.70	46.50
5050-F	42.80	47.60
3004-F	43.80	49.50
5052-F	44.40	50.20
6061-T6	44.90	51.00
2024-T4	48.60	55.40
7075-T6*	56.40	64.00

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	76.20	73.20	....	....
0.156	64.20	61.40	....	....
0.172	....	61.40	....	....
0.188	64.20	61.40	....	79.60
0.203	64.20	61.40	....	....
0.219-0.234	61.00	59.50	....	....
0.250	61.00	59.50	88.40	75.90
0.266-0.281	61.00	59.50	....	....
0.313	61.00	59.50	81.40	72.20
0.344	60.50	....	81.40	....
Cold-Finished				
0.375-0.547	60.50	59.30	72.80	67.80
0.563-0.688	60.50	59.30	69.10	63.50
0.719	....	57.70	....	....
0.750-1.000	59.00	57.70	62.90	59.70
1.063	59.00	57.70	....	57.60
1.250-1.500	56.60	55.40	60.80	57.60
Rolled				
1.563	55.00	53.70	....	....
1.625-2.000	54.30	52.90	59.60	55.50
2.063	....	51.40	....	....
2.125-2.500	52.80	51.40	....	55.50
2.500-3.000	51.20	49.70	....	55.50
3.250-3.375	....	49.70	....	....

Forging Stock: Round, Class 1, random lengths, diam. 0.688-8 in., "F" temper: 2014, 41.50-54.30; 6061, 40.90-54.30; 7075, 42.90-56.30; 7079, 43.40-56.80.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
¾	$18.60	2	$ 57.40
1	29.35	4	157.60
1¼	39.75	6	282.95
1½	47.50	8	425.80

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	45.40-47.00	58.60-62.80
12-14	45.70-47.20	59.30-63.80
15-17	45.90-47.90	60.50-65.50
18-20	46.50-48.30	62.50-68.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.13b	45.36c	....	48.32	21.000	21.000	20.250
Yellow Brass	42.69	29.53d	43.23	45.60	16.125	15.875	14.500
Low Brass, 80%	44.90	44.84	45.44	47.71	17.875	17.625	17.125
Red Brass, 85%	45.67	45.61	46.21	48.48	18.625	18.375	17.875
Com. Bronze, 90%	46.98	46.92	47.52	49.54	19.250	19.000	18.500
Manganese Bronze	50.81	44.91	55.44	....	14.875	14.625	14.125
Muntz Metal	45.19	41.00	....	....	15.125	14.875	14.375
Naval Brass	47.07	41.38	54.13	50.48	14.875	14.625	14.125
Silicon Bronze	52.84	52.03	52.88	54.77	20.625	20.375	19.625
Nickel Silver, 10%	57.93	60.26	60.26	....	21.125	20.875	10.562
Phos. Bronze, A-5%	67.17	67.67	67.67	68.85	21.875	21.625	20.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, or any or all kinds of scrap, add 1 cent per lb.

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 19.00-19.50; No. 2 heavy copper and wire, 17.00-17.50; light copper, 15.00--15.50; No. 1 composition red brass, 15.50-16.00; No. 1 composition turnings, 14.50-15.00; new brass clippings, 13.25-13.75; light brass, 9.50-10.00; heavy yellow brass, 11.00-11.50; new brass rod ends, 11.25-11.75; auto radiators, unsweated, 11.50-12.00; cocks and faucets, 13.00--13.50; brass pipe, 13.00-13.50.

Lead: Heavy, 6.75-7.00; battery plates, 2.75-3.00; linotype and stereotype, 8.75-9.25; electrotype, 8.00-8.50; mixed babbitt, 9.25-9.75.

Monel: Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 2.75-3.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 51.00; light scrap, 46.00; turnings and borings, 31.00.

Copper and Brass: No. 1 heavy copper and wire, 20.50; No. 2 heavy copper and wire, 19.50; light copper, 17.25; refinery brass (60% copper per dry copper content, 17.75.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 20.50; No. 2 heavy copper and wire, 19.50; light copper, 17.25; No. 1 composition borings, 18.00; No. 1 composition solids, 18.50; heavy yellow brass solids, 12.50; yellow brass turnings, 11.50; radiators, 14.50.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70.

Copper: Flat-rolled, 41.79; oval, 40.00, 5000-10,000 lb; electrodeposited, 31.25, 2000-5000 lb lots; cast, 36.25, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 113.50; 200-499 lb, 112.00; 500-999 lb, 111.50; 1000 lb or more, 111.00.

Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.70 per lb in 100-lb drums.

Chromic Acid: 100 lb, 33.30; 500 lb, 32.80; 200 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30; f.o.b. Detroit.

Copper Cyanide: 100-200 lb, 68.40; 300-900 lb, 66.40; 1000-19,900 lb, 64.40.

Copper Sulphate: 100-1900 lb, 13.70; 2000-5900 lb, 11.70; 6000-11,900 lb, 11.45; 12,000-22,900 lb, 11.20; 23,000 lb or more, 10.70.

Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.

Nickel Sulphate: 5000-22,000 lb, 33.50; 23,000-35,900 lb, 33.00; 36,000 lb or more, 32.50.

Sodium Cyanide: 100 lb, 27.60; 200 lb, 25.90; 400 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 75.80; 100-600 lb, 66.80; 700-1900 lb, 64.00; 2000-9900 lb, 62.20; 10,000 lb or more, 60.80.

Stannous Chloride (anhydrous): Less than 25 lb, 165.30; 25 lb, 130.30; 100 lb, 115.30; 400 lb, 112.90; 5200-19,600 lb, 100.70; 20,000 lb or more, 88.50.

Stannous Sulphate: Less than 50 lb, 128.10; 50 lb, 98.10; 100-1900 lb, 96.10; 2000 lb or more, 94.10.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 159*)

are rising. The mills have plentiful inventories, but they are engaged at 97 per cent of capacity and this serves to inject a degree of strength into the scrap market.

Increases in prices last week ranged from $1 to $2 a ton. No. 1 heavy melting and No. 1 busheling at $33 are up $1. No. 1 bundles are quoted $34, up $2. Stove plates moved up from $37 to $38, and rerolling rails from $53 to $55.

Birmingham—The movement of scrap was slow here last week, but the market appears stronger. Prices are firm. Dealers are reluctant to part with tonnage at current prices.

Houston—Scrap consumers are not buying, domestic mills living off their inventories. Little tonnage is coming into local yards.

Shipments of high speed and tool steel (excluding hollow drill steel) totaled 5679 net tons in April, reports the American Iron & Steel Institute. The total was down slightly from the 5773 tons moved in March and was off sharply from the 9079 tons shipped in April, 1957.

The tonnage movement in the first four months this year was 23,652, vs. 37,850 in the corresponding period last year.

San Francisco—Steel scrap prices are unchanged here. Sentiment is a little better, and the view prevails that if prices can hold steady for a while longer, the next movement in the market will be upward. Consumers' inventories are reported shrinking.

Seattle—The scrap market is unchanged here despite the firming up reported in eastern districts. Sales are insufficient to establish firm prices. Inventories are substantial and receipts are light.

Los Angeles—Scrap prices here are off an average of $2 a ton with buying absent. No. 1 heavy melt-

UNUSUAL OFFERING

MODERN OVERHEAD CRANES

CAN BE INSPECTED IN OPERATION

Capacity	Name	Span	Lift
50 Ton (2-25 T. Trolleys)	Shepard Niles	100′ 6″	25′
75 Ton	N. B. P.	75′	40′
150 Ton (2-75 T. Trolleys)	Shepard Niles	100′	39′
20 Ton (2-10 T. Trolleys)	Shaw	96′	27′
2-20 Ton (2-10 T. Trolleys)	N. B. P.	71′ 10″	25′ 6″

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Experienced in the operations of electric weld steel tubing mills. Steady job with well established company. Replies confidential. Write Box 669, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Complete water circulation
No dead ends to accumulate sediment.

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New design shortens depth of wash unit. Never before a booth with such maintenance ease.

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ing is quoted $32, off $2; No. 2 heavy melting is $30, also off $2. Machine shop turnings, though, are up $2 a ton to $11.

Pig Iron . . .

Pig Iron Prices, Page 154

The higher steelmaking rate is supported by somewhat higher blast furnace operations. In Chicago, for instance, the ingot rate rose last week to 68.5 per cent from 64 per cent the previous week, while 22 blast furnaces (out of 43) are in operation against 20 in late April and early May.

U. S. Steel restored its No. 1 furnace at Gary, Ind., on May 19 while Inland Steel relighted its No. 2 furnace at Indiana Harbor, Ind., on May 23. Within a week or so, Republic Steel will relight its South Chicago, Ill., furnace which went down for relining Apr. 16.

Pig iron demand in June is expected to closely parallel the May rate which was the best for the year to date.

Warehouse . . .

Warehouse Prices, Page 154

Activity in the warehouse market has been stimulated by the possibility of an advance in steel prices next month. Some hedging by fabricators is reported, although it has not been as heavy as it was a year ago when an upward revision in producers' price schedules was certain. Hedging would be heavier if consumption were at a higher level.

Most users continue to buy hand to mouth, knowing that distributors' stocks are well balanced and available for immediate delivery.

Stainless Steel . . .

Stainless Steel Prices, Page 153

Sluggishness continues in the stainless steel market. The auto industry's marked absence from the market is keenly felt. Buyers now are promising to start placing orders this month. That includes automotive tonnage for pilot runs on the 1959 model cars.

Republic Steel Corp. has made some minor revisions in its extras cards for stainless products. Sheets, hot-rolled bars and wire rods, and cold-finished bars and wire are affected.

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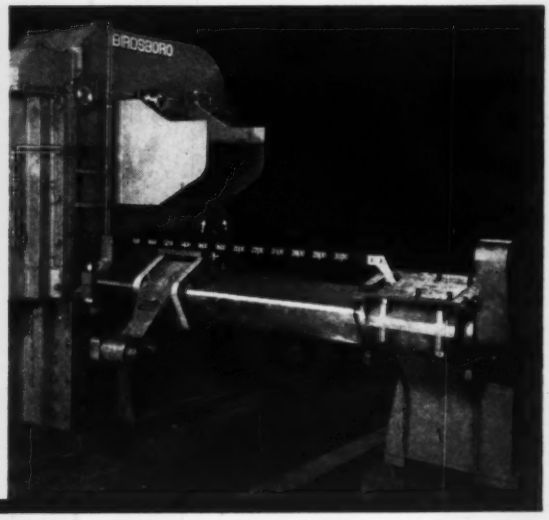

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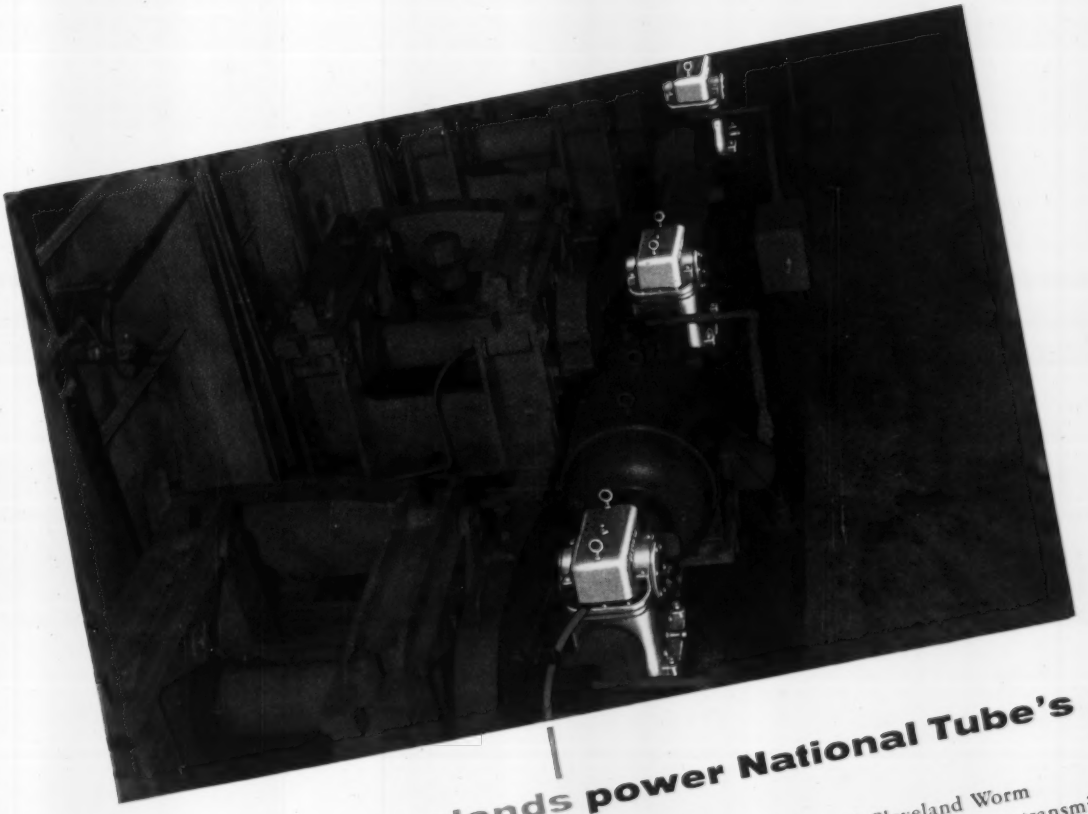

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Write or wire today for your copy of the Unitrol book, EL-174. No obligation. CUTLER-HAMMER Inc., 1211 St. Paul Avenue, Milwaukee 1, Wisconsin.

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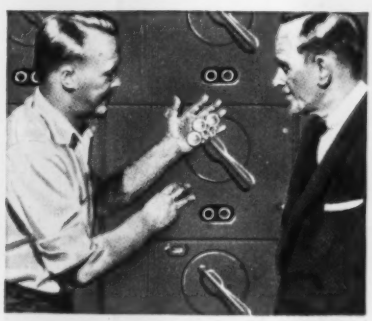

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